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MFP-PB-209

PARTS BULLETIN

Models: AR-FX7/MX-FX10 (Option for MX-M260Series/MX-M310 Series)

Priority: Low

Date: June 2011

Subject: **Change of the manufacturer of FAX ROM for FAX MAIN PWB to improve productivity**

Details: To improve productivity, the manufacturer of FAX ROM for FAX MAIN PWB has been changed from Spansion to Macronix.
As a result of this change, the parts code for the FAX MAIN PWB has also been changed. The old and the new FAX MAIN PWB are interchangeable. However, there is no interchangeability between the old and the new FAX ROM. Therefore the old FAX ROM will continue to be supplied as a service part.

This change has been implemented from January, 2011 production.

Model	P/G No.	Previous Part	New Part	Price Rank	Qty	Description	Inter-change-ability
AR-FX7	1-16	CPWBX0237QS31	CPWBX0237QS22	CK	1	Fax Main PWB	1
AR-FX7	1-201	VHI29L1600QQS	VHI29LF1M001H	BC	1	Fax ROM	4
MX-FX10	1-20	CPWBX0171QS44	CPWBX0171QS18	CM	1	Fax Main PWB	1
MX-FX10	1-23	VHI29L32062QS	VHI29LF2M002H	BB	1	Fax ROM	4

Interchangeability

1. Interchangeable	4. Not interchangeable
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: **DCE-832**

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MFP-PB-180

PARTS BULLETIN

Models: MX-M260/MX-M310

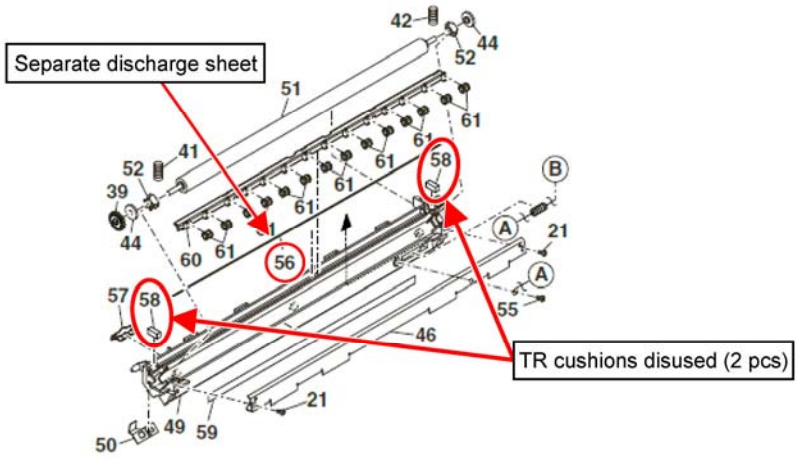
Priority: Low

Date: December 2009

Subject: **The TR Cushions in the Transfer Unit are Discontinued**

Description: Since November 2009 we have discontinued the TR Cushions in the Transfer Unit because the Separate Discharge Sheet makes the TR Cushions unnecessary.

Details: Please see below for more information.



Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-M260 MX-M310	12 -58	PMLT-0044QSZZ	-	-	TR Cushion	6

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference Number: DCE-787

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MFP-PB-185

PARTS BULLETIN

Models: MX-M260/MX-M310

Priority: Low

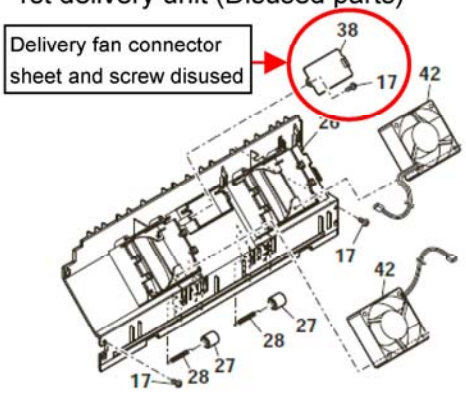
Date: February 2010

Subject: **Delivery Fan Connector Sheet and Screw is Discontinued**

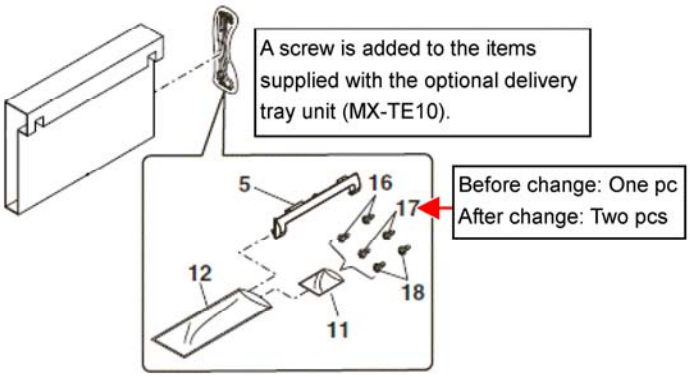
Description: Since December 2009, we have discontinued the use of the Delivery Fan Connector Sheet and the Screw used to hold it in place. Since this Screw is also needed when installing the option MX-TE10, we have added a Screw to this option since December 2009. Please order an additional screw if installing the MX-TE10 produced before December 2009.

Details: Please see below and the following page for details regarding this parts change.

・ 1st delivery unit (Disused parts)



・ Option MX-TE10 (Added part)



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Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-M260 MX-M310	20 -38	PSHEZ0655FCZZ	-	-	Delivery Fan Connector Sheet	5
	20 -17	XEBS730P08000	Quantity Change 5→4	AC	Screw	
MX-TE10	2 -17		Quantity Change 1→2			-

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: DCE-790

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MFP-PB-189

PARTS BULLETIN

Models: MX-M260/MX-M310

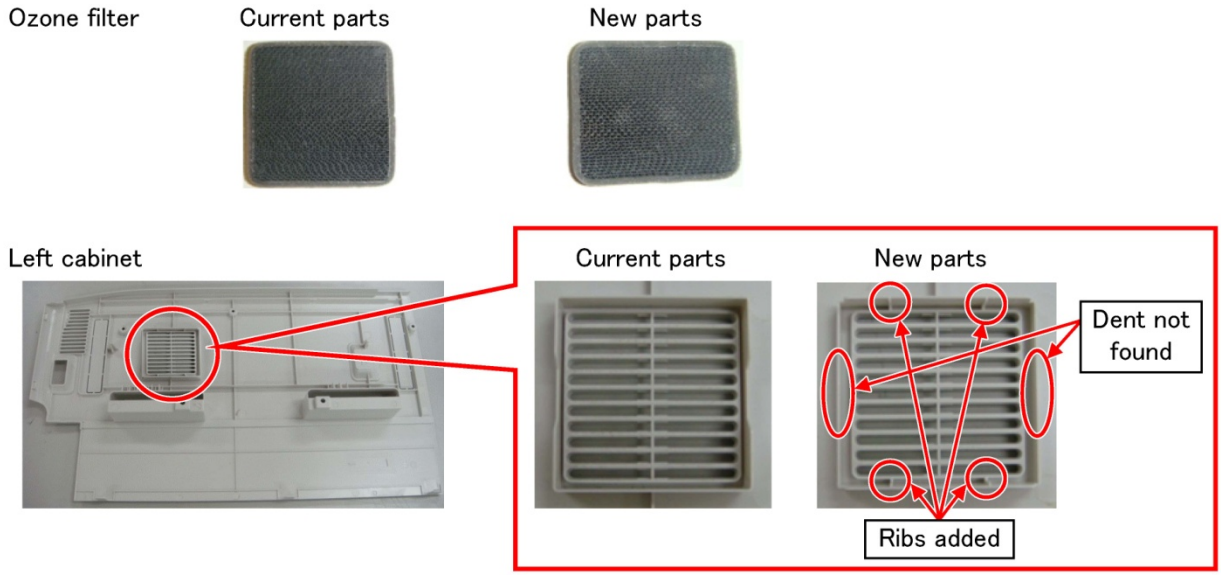
Priority: Low

Date: May 2010

Subject: **Standardization of the Ozone Filter and Change of Left Cabinet Shape**

Description: In February 2010 production we changed the Ozone Filter used in the exterior to the same one that is used in the 1st Delivery Unit. We have changed the shape of the Left Cabinet to accommodate the shape of the new filter.

Details: Please see below and on the following page for more information about this part change.



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Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-M260 MX-M310	2 -18	PFILZ0016QSZZ	PFILZ0017QSZ1	AP	Ozone Filter	5
	2 -21	GCAB-0149QSZ1	GCAB-0149QSZ3	AV	Left Cabinet	

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: DCE-804

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MFP-PB-196

PARTS BULLETIN

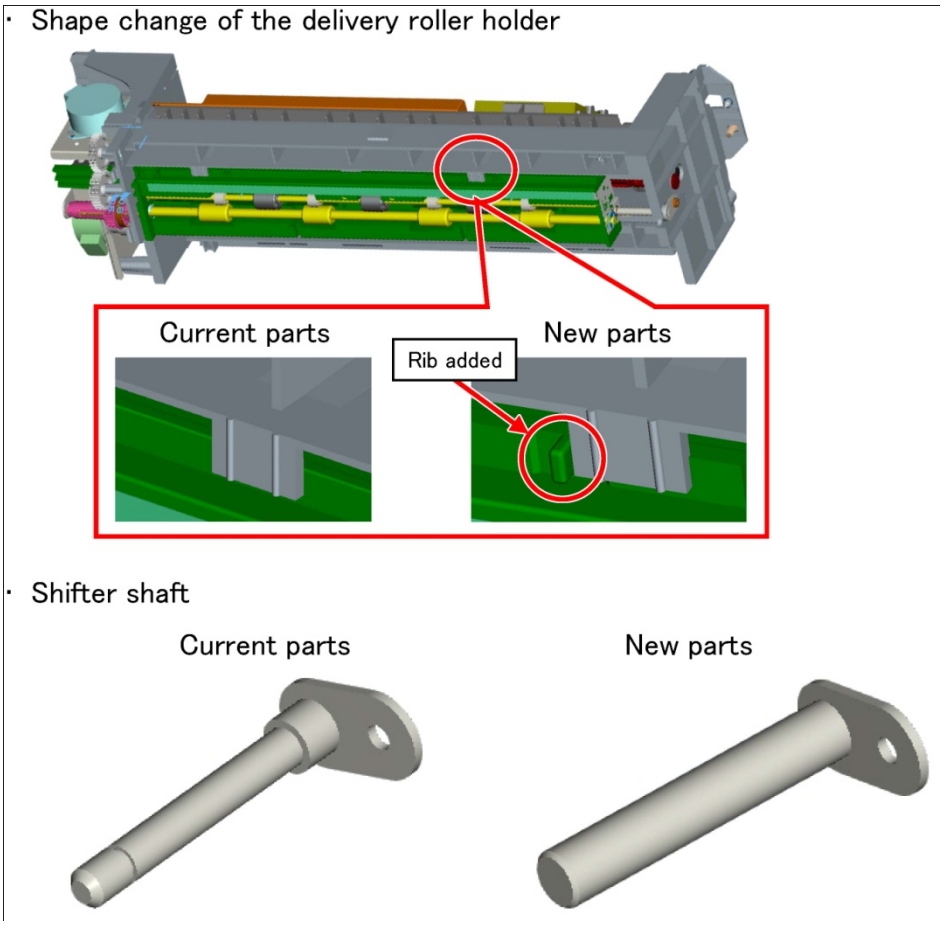
Models: MX-M260/MX-M310

Priority: Low

Date: July 2010

Subject: **Shape Change of the Delivery Roller Holder in the 1st Delivery Unit**

Details: The shapes of the Delivery Roller Holder and the Shifter Shaft have been changed to improve productivity (Fig.1). As a result, the Transport Roller Bearing and the E Type Ring are no longer used (Fig.2).



(Fig. 1)

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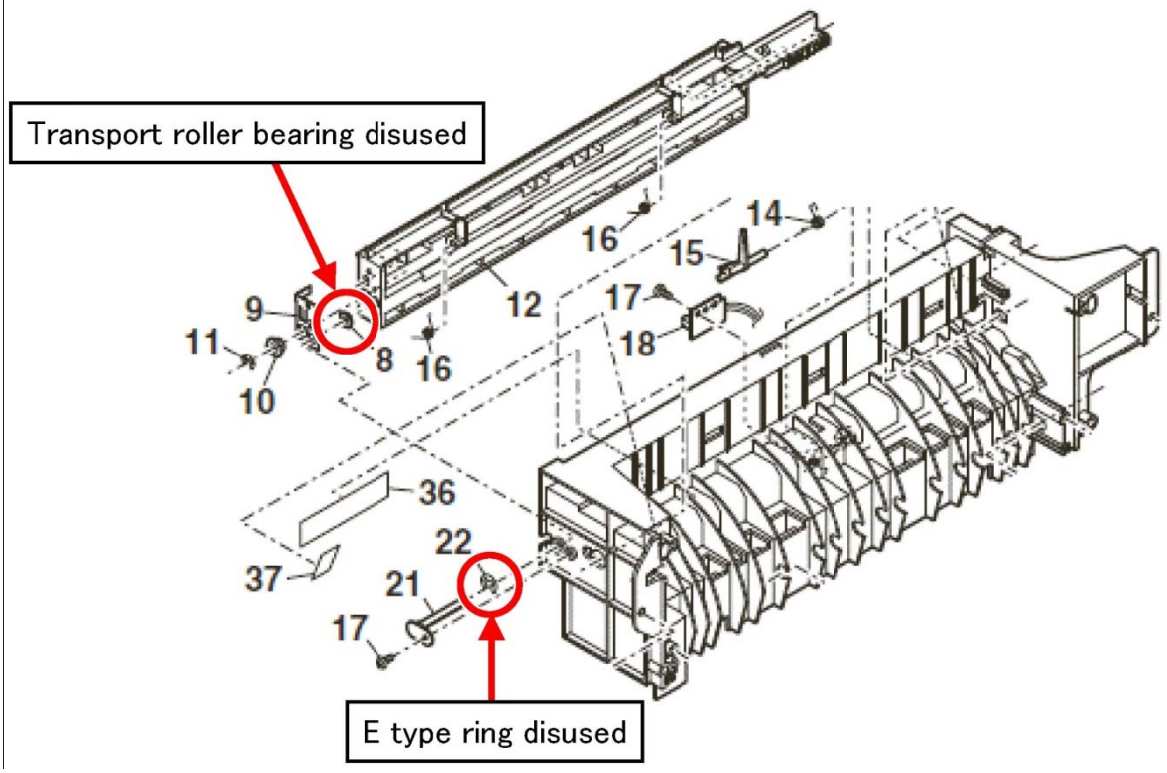
・ Disuse of the transport roller bearing and E type ring



(Fig.2)

Implementation Date: April 2010 Production

Model Name	P/G No.	Previous parts	New parts	Price rank	Q'ty	Parts name	Effective time	Inter-change-ability
MX-M260 MX-M310	20 -8	NBRGY2122SCZZ	-	-	1	Transport roller bearing	April 2010	5
MX-M260 MX-M310	20 -12	LHLDZ0058QSZ3	LHLDZ0058QSZ4	AM	1	Delivery roller holder		
MX-M260 MX-M310	20 -21	CSFTZ0023QS04	CSFTZ0023QS06	AE	1	Shifter shaft		
MX-M260 MX-M310	20 -22	XRESP40-06000	Quantity Change 2→1	AA	1	E type ring(E4)		

<Interchange>

1. Interchangeable.	4. Not Interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of new type. New type can be used in place of current type.	6. Others.

Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Reference: DCE-813

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MFP-PB-197

PARTS BULLETIN

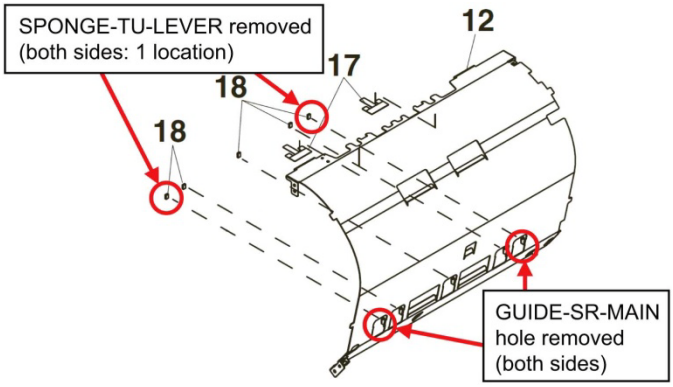
Models: MX-FN10

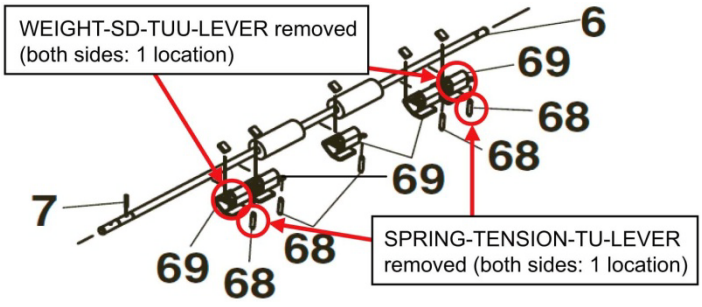
Priority: Low

Date: 07-14-2010

Subject: **PAPER GUIDE SHAPE CHANGE**

Details: The SPONGE-TU-LEVER on the SR frame and the SPRING-TENSION-TU-LEVER and WEIGHT-SD-TUU-LEVER on the SR unit have been discontinued, and the profiles of the GUIDE-SR-MAIN and the GUIDE-SR-MAIN on the SR unit have been changed





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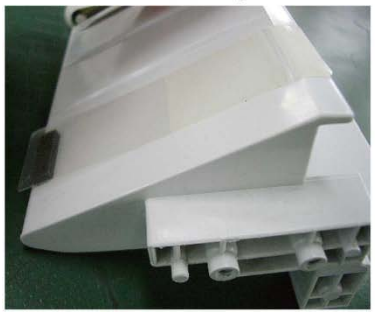
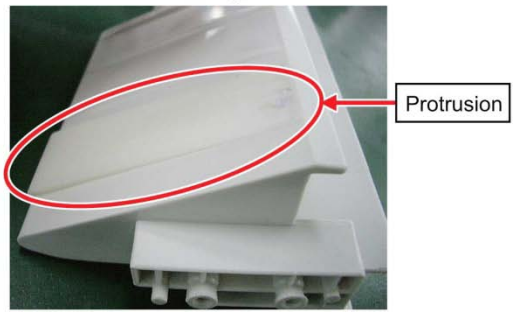
GUIDE-SR-SB-D

Before change



After change



Model	P/G No.	Previous Part	New Part	Price Rank	Quantity	Description	Inter-change-ability
MX-FN10	3-12	0CW4158P003//	0CW4158P003E/	BD	1	GUIDE-SR-MAIN	5
	3-18	0CW4158P603//	Quantity change 5 ▸3	AC	3	SPONGE-TU -LEVER	
	21-68	0CW4158P620//	Quantity change 5 ▸3	AC		SPRING-TENSION -TU-LEVER	
	21-69	0CW4158P501//	Quantity change 5 ▸3	AE		WEIGHT-SD-TUU -LEVER	
	3-27	0CW4158P595//	0CW4158P595D/	AZ	1	GUIDE-SR-SB-D	1

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: CCE-797

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MFP-PB-199

PARTS BULLETIN

Models: MX-FN13 (Option for MX-M260/MX-M310)

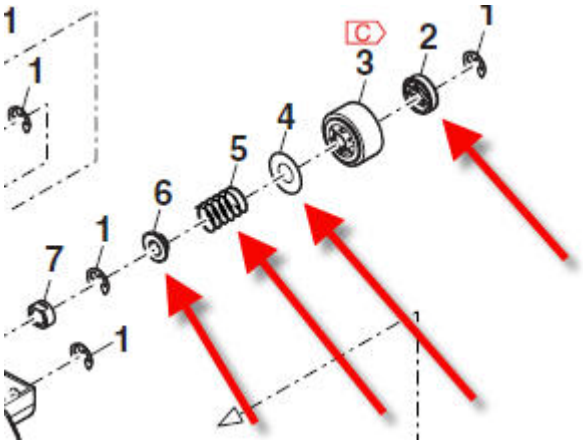
Priority: Low

Date: August 2010

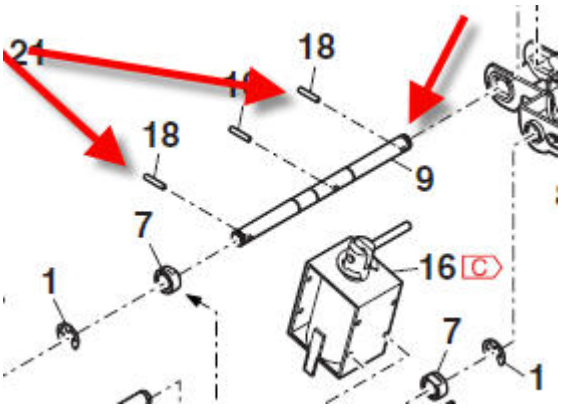
Subject: **Parts Discontinuation and Part Shape Changes**

Details: The Paper in Gate SP in the paper in section and the Tray Paper in Collar, Washer, Pickup Roller, and Flange Bush in the ST tray 2 section have been discontinued.

The shape of the Pickup Shaft and SP Pin in the ST tray 2 section and the FIN Joint Plate AS in the FIN joint section have been changed.



Discontinued (Parts Guide: Page 7)



Discontinued (Parts Guide: Page 7 Item 18)
Changed (Parts Guide: Page 7 Item 9)

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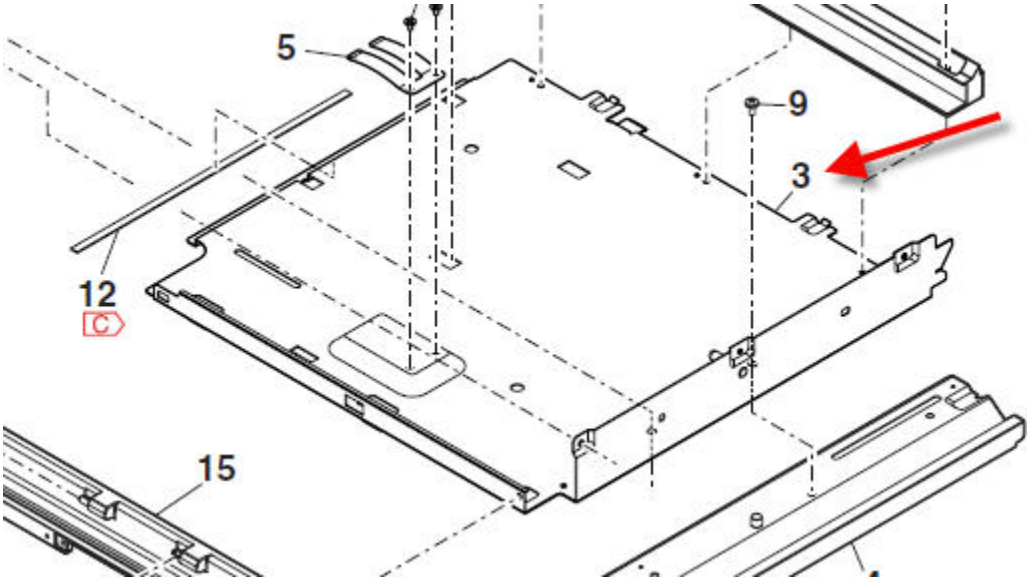
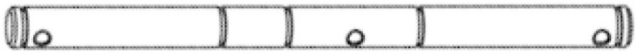
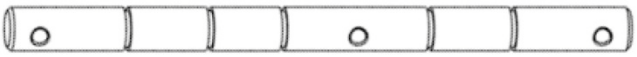


Changed Part (Parts Guide: Page 8)

- Pickup shaft Before change

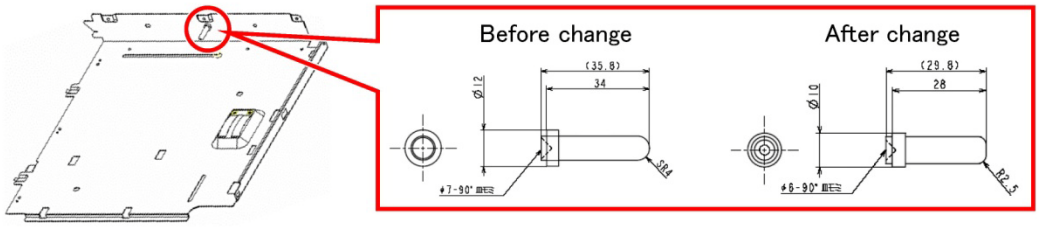


After change



- SP pin (Before change: ϕ 2×10 → After change: ϕ 2×8)

- Modification of the FIN joint plate AS (Caulking boss section)



Changes Details

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Previous Part	New Part	Price Rank	Description	Q'ty	Inter-change-ability
PCLR-0579FCZZ	-	-	Tray paper in collar	-	5
LX-WZ0454FCZZ			Washer		
MSPRC0408QSZZ			Pickup roller spring		
NBRGP0917FCZZ			Flange bush		
NSFTZ0105QSZZ	NSFTZ0105QSZ1	AS	Pickup shaft	1	
LPINS0133FCZZ	LPINS0326FCZZ	AC	SP pin (2x8)	2	
MSPRT0417QSZZ	-	-	Paper in gate spring	-	1
CPLTM0484QS01	CPLTM0484QS02	BQ	FIN joint plate	1	

Interchangeability

1. Interchangeable	4. Not interchangeable
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: DCE-816

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MFP-PB-202

PARTS BULLETIN

Models: MX-M260/MX-M310/AR-M257/AR-M317

Priority: Low

Date: September 2010

Subject: **Drum Coupling Gear Modification Friction Washer Discontinued**

Details: The Drum Coupler Gear (in the drive unit) has been changed, the new is made of different material and it is black. Also the friction Washer has been discontinued. These changes have been made to improve productivity.

Drum Coupling Gear before and after modification.

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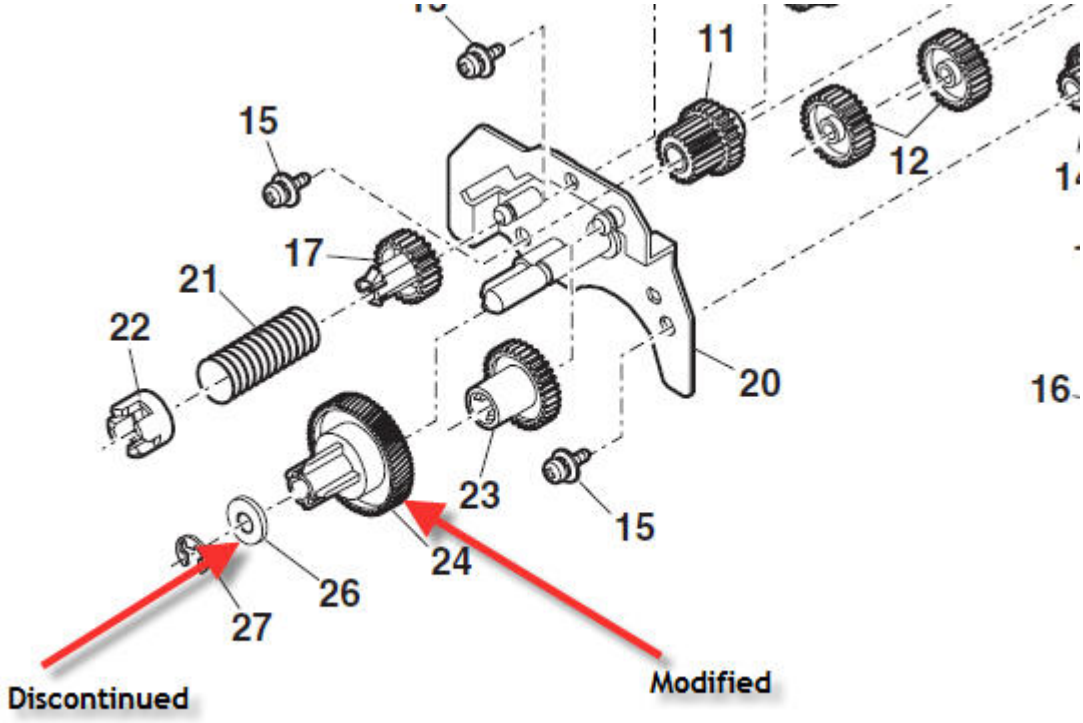

Drum Drive Section: Discontinued part from MX-M310 PG; page 49, item 26.
Modified part from MX-M310 PG; page 49, item 24.

P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
49-24	CGERH0204RS51	CGERH0204RS52	AS	Drum cup gear	5
49-26	LX-WZ0012QSZZ	-	-	Poly slider	

Interchangeability	
1. Interchangeable	4. Not interchangeable
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: DCE-817

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MFP-PB-219

PARTS BULLETIN

Models: AR-5516D/AR-5520D/MX-M200D/MX-M260/MX-M310

Priority: Low

Date: August 2011

Subject: **Standardization of MC Case and Related Components**

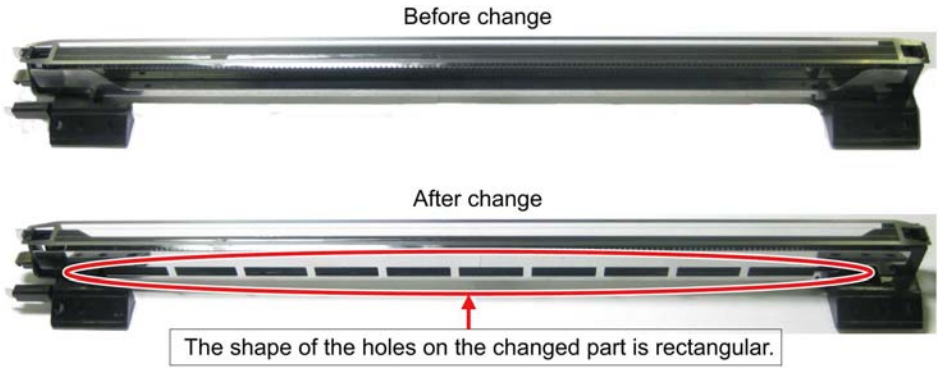
Details: Please see the details below.

The Shape of the MC Case on the Process Unit has been changed for standardization reasons. Additionaly, the Resistor, the Ground Plate, the Ground Plate Cushion, Screws and other components have been removed.

Please remove these components when replacing the old MC Case with the new style MC Case.

- **MC Case**

- **MC Holder Unit**



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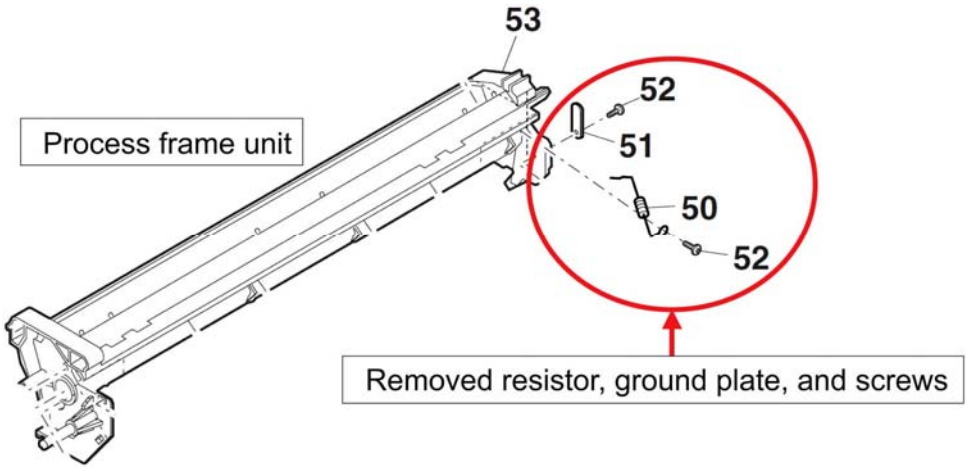
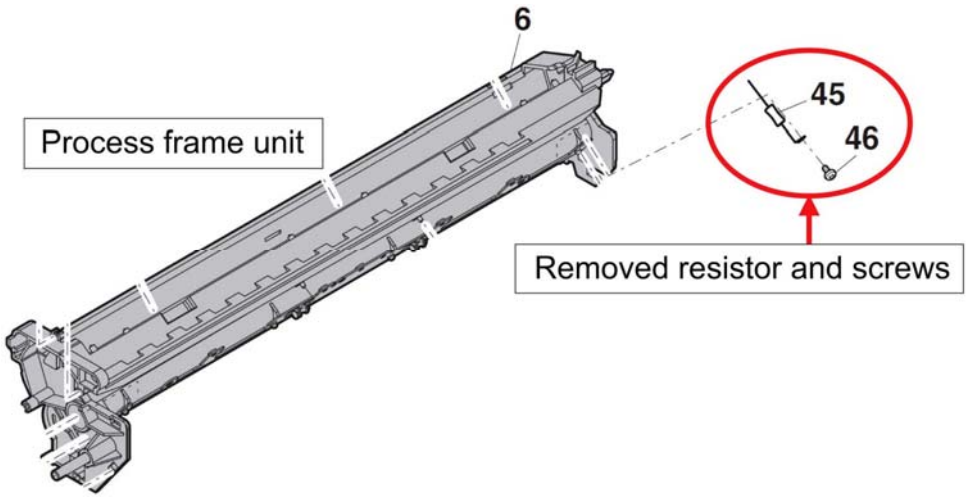
AR-5516 Series / AR-5520 Series / MX-M200D Series



MX-M260 Series / MX-M310 Series



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Implementation Date: March 2011 Production

Model name	P/G No.	Current parts	New parts	Price rank	Q'ty	Parts name	Effective time	Inter-change-ability
AR-5516D AR-5520D MX-M200D	7-2	CHLDZ0035RS55 CHLDZ0035US55	CHLDZ0035RS59	AV	1	MC holder unit	Mid-June 2011	5
	7-49	PCASZ0007QSZZ	PCASZ0016QSZZ	AK		MC case		
	7-50	RR-HZ226JFCPZ	---	---	---	Resistor		
	7-51	LPLTM0101QSZ2	---	---	---	Earth plate		
	7-52	XBBS730P06000	---	---	---	Screw(3×6)		
MX-M260 MX-M310	16-31	CHLDZ0035RS58	CHLDZ0035RS60	AU	1	MC holder unit		5
	16-45	RR-HZ226JFCPZ	---	---	---	Resistor		
	16-46	XBBS730P06000	---	---	---	Screw(3×6)		

<Interchange>

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of new type. New type can be used in place of current type.	6. Others.

Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Reference: DCE-835

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MFP

MFP-SB-349

SERVICE BULLETIN

Models: MX-M260/MX-M310/MX-M200D
AR-168D/AR-168S/AR-208S/AR-208D
AR-M160/AR-M162/AR-M162E/AR-M205/AR-M207/AR-M207E
AR-5316/AR-5220/AR-5516/AR-5520D
AR-M257/AR-M317/AR-M237/AR-M277/AR-235/AR-275/AR-N275

Priority: Medium

Date: December 2009

Subject: **Maintenance Software Version Upgrade (Version 04.22)**

Description: The maintenance software has been updated to Version 04.22 to support new models.

Key changes:

Addition of models MX-M260/MX-M310

Note: This version or newer is required for the MX-M260/MX-M310.

Reference Number: DCE-785

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MFP-SB-351

SERVICE BULLETIN

Models: MX-FN13 (Option for MX-M260/MX-M310)

Priority: Medium

Date: January 2010

Subject: **ROM Upgrade (1) A21 October 2009**

Description: The MX-FN13 ROM has been upgraded.

Details: Please see below for the details of the upgrade.

Control No.	Version
A21	03.01

Versions	
Finisher	03.01
File Name: MXFN13-3.01-A21.zip	

Reasons for the change: The following issues have been resolved.

1. The stapling position of the Legal/LT-R/A4-R/B5-R size was off to the inside by approximately 2 mm. This issue has been resolved.
2. Stacking during one-side staple job of AB series size was improved.
3. If the paper sensor could not detect the sheets on the delivery tray, the tray moved up every time the paper was delivered to the compiler. This issue has been resolved.
4. If the paper detect mechanism on the delivery tray was defective, the tray moved up abnormally when the job was continued with the tray full. This issue has been resolved.
5. The staple job consistency was improved.

Reference Number: DCE-779

Sharp Imaging and Information Company of America
Sharp Plaza Mahwah, NJ 07495-1163 email: idnc@sharpsec.com

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MFP-SB-352R

This Bulletin Supersedes MFP-SB-352

New Information is shown in blue.

SERVICE BULLETIN

Models: MX-2300N/MX-2700N/MX-3500N/MX-3501N/MX-4501N
MX-2600N/MX-3100N/MX-4100N/MX-4101N/MX-5001N
MX-5500N/MX-6200N/MX-7000N/MX-6201N/MX-7001N
MX-C311/MX-C401*
MX-M283N/MX-M363N/MX-M453N/MX-M503N
MX-M260/MX-M310

Priority: Medium

Date: November 2009

Subject: **Instructions to Prevent Occurrence of F2-40 Code**

Description: In some cases the Developer Unit may become over toned causing F2-40 code. The steps below will help to prevent this code.

Details: Follow the instructions provided in the Current Installation Manual for:

- Developer Unit installation
- Setting the Reference Toner Density
- Installing the Toner Cartridges

Do not shake the Toner Cartridges more than recommended.

Gently insert the Toner Cartridge into the MFP.

Remove the Toner Cartridges from the MFP whenever transporting the MFP and only reinstall the Toner Cartridge when finished with moving the MFP.

***Note for MX-C311 MX-C401**

The Installation Manual says to install the Toner Cartridge before the automatic DV adjustment, but the Toner Cartridge should not be installed until after the DV adjustment. The firmware has been changed so that the install Toner Cartridge message will not be displayed until after the automatic DV adjustment is executed as stated in MFP-SB-338.

Reference Number: ARE-950

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MFP-SB-379

SERVICE BULLETIN

Models: MX-M260/MX-M310/MX-PB12/AR-FX7

Priority: Medium

Date: March 2010

Subject: **ROM Upgrade (1) A01**

Description: We have upgraded the MCU, PCL, and FAX ROM versions in December 2009 production.

Details: Please see below and on the following page for information about this upgrade.

Version Information

Target model	ROM Control Number	MCU	IMC	OPE	PCL	FAX
MX-M260	A01	V02.00	V05.00	V01.00	V01.06	V04.01
MX-M310	A01	V02.00	V01.00	V01.00	V01.06	V04.01

We have posted these firmware files separately for each model and option

Engine Firmware			
Model	MXM260		
Release Type	Production	Control ROM ID	A01
Release Date	December 2009	File Name	MXM260-0200-A01.zip
Versions			
MCU IMC OPE	02.00 05.00 01.00		

Engine Firmware			
Model	MXM310		
Release Type	Production	Control ROM ID	A01
Release Date	December 2009	File Name	MXM310-0200-A01.zip
Versions			
MCU IMC OPE	02.00 01.00 01.00		

Printer Expansion Kit Firmware			
Model	MXPB12 installed on MXM260, MXM310		
Release Type	Production	Control ROM ID	A01
Release Date	December 2009	File Name	MXPB12-010600-A01.zip
Versions			
PRINTER	01.06		

Facsimile Expansion Kit Firmware			
Model	ARFX7		
Release Type	Production	Control ROM ID	
Release Date	December 2009	File Name	ARFX7-0401.zip
Versions			
FAX	04.01		

Description of Changes

No.	Item	Description
1	UI relation	If the screen is switched when the delivery tray is full, the delivery tray full indicator flashes. This issue has been fixed.
2	Copy relation	If toner end occurs when performing staple sort copying, a message prompting removal of the paper in the staple compiler appears after replacing toner, and staple job is not resumed. This issue has been fixed.
3	Printer relation	If paper runs out during printing with sheets stapled and it is left in that state for a long time, printing is not resumed even if paper is loaded. This issue has been fixed.
4	List print relation	If the FAX setting list is printed when the delivery tray is full, a message prompting removal of the delivered paper appears, and hang-up occurs. This problem is fixed.
5	E-mail alert relation	If "F1-15" trouble occurs when setting the E-mail alert, the E-mail alert is sent; however the trouble code is not listed in the text. This issue has been fixed.
6	Simulation relation	A check item for the sensor (FPLS) of the inner finisher added as a countermeasure against jam during stapling has been added to Simulation 3-21.
7	Soft SW relation	A change has been made so that the display timing of the message appearing when the drum and developer reach the life cycle can be selected by the soft SW. Simulation 55-1 Soft SW 4-6 0: The life is determined by the counter or running distance. (Conventional display: Default) 1: The life is determined by the counter only.
8	Others	Flash ROM made by MACRONIX can be used.

Reference: DCE-788

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MFP-SB-415

SERVICE BULLETIN

Models:	MX-M260/MX-M310/AR-M257/AR-M317/AR-M237/AR-M277 MX-B401/MX-M350/MX-M450/AR-M355/AR-M455 MX-M283/MX-M363/MX-M453/MX-M503 MX-M550/MX-M620/MX-M700/AR-M550/AR-M620/AR-M700 MX-M850/MX-M950/MX-M1100 MX-C311/MX-C401/MX-2300N/MX-2700N/MX-2600N/MX-3100N MX-3500N/MX-3501N/MX-4501N/MX-4100N/MX-4101N/MX-5001N MX-5500N/MX-6200N/MX-7000N/MX-6201N/MX-7001N
Priority:	Medium
Date:	June 2010
Subject:	**Sharp MFP Security**
Description:	This document includes Sharp Security At a Glance and Security Q & A.
Details:	Please see the following pages for a letter from our Vice President and information about Sharp and MFP Security.

SHARP ACADEMY
24/7 EDUCATION ONLINE WITH YOU
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May 25, 2010

Dear Sharp MFP Customer,

The recent CBS evening news story focusing on Copier Security has shined a much-needed spotlight on the subject. At Sharp, we are gratified to have this attention turn to a subject we've championed for the better part of a decade. Although other manufacturers have followed Sharp's lead and now offer some copier security features, this leadership was on display as Sharp was the only copier vendor contacted by CBS to go on camera to discuss this issue. In fact, a portion of the story was filmed at our US Headquarters office in Mahwah, New Jersey and featured an appearance and comments by our company President, Ed McLaughlin.

For a decade now, Sharp has offered a broad array of standard and optional security features that are designed to help you protect your confidential and private information. To address the specific issue of image data on the hard drive, Sharp offers the Data Security Kit, which when equipped on the MFP provides additional security, including two key steps:

- The first step is that all data on the Hard Drive is stored at 256 bit encryption.
- Once the job is complete, the data is overwritten up to seven (7) times. This can be done after every job, when the machine is turned on or on demand. If used correctly, this process renders the data on the drive virtually unrecoverable.

If customers choose not to purchase a Sharp Data Security Kit, Sharp strongly recommends that at the end of the product life, you purchase a new Hard Drive for your MFP and retain and destroy the original Hard Drive that contains your confidential information. While many people have considered reformatting the Hard Drive as a measure to protect the information on the drive, we do not recommend this method as a secure alternative to protect the confidentiality of your information. In order to complete any of these actions, please contact your Sharp Authorized Service Provider.

While the CBS story highlights the issue of confidential and protected information remaining on the hard drive, the security concerns on a networked, digital copier run much deeper. The recently published IEEE Standard for Information Technology: Hardcopy Device and System Security Requirements (IEEE 2600™-2008) addresses multiple aspects of security including, but not limited to, authentication, authorization, privacy, integrity, device management, physical security, and information security. This new standard validates the Sharp position that true security requires much more than simple overwrite at the end of a lease.

We have included the attached Security At a Glance and a Security Q & A which addresses many of the questions you may have and provides a comprehensive overview of the security issue and what can be done to protect your organization.

Sincerely,

Mike Marusic
Vice President, Marketing & Service
Sharp Imaging and Information Company of America

Attachments:	Sharp Security At-A-Glance, Security Q&A

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Sharp Security At a Glance

As a leader in office equipment security, Sharp makes it easy for virtually any business or government entity to safely deploy digital copying, printing, scanning and faxing. We have been awarded BERTL's "Most Secure MFP Range" Award – for six consecutive years, were the first in the industry to achieve Common Criteria (ISO 15408) certification, to date have achieved the industry's highest level of certification and we continue to maintain a full line of validated products.

Sharp offers products that meet the requirements of the recently published IEEE Standard for Information Technology: Hardcopy Device and System Security Requirements (IEEE 2600™-2008) which defines security requirements for manufacturers, users, and others on the selection, installation, configuration, and usage of hardcopy devices, including printers, copiers, and multifunction devices (MFDs).

This commitment to security is designed to help protect your data, and makes Sharp the optimum choice to protect confidential and protected information through our layered approach to security:

Access Control
Account management enables administrators to control access functions (Copy, Scan, Fax, and Print) and to monitor usage. Also provides support for Common Access Card (CAC) login.

Documents Remain Confidential
To help protect your printed documents from unauthorized viewing, Sharp MFPs offer confidential printing that requires users to enter a PIN code in order to print a queued document. Additionally, Secure Fax Release holds fax documents in memory until an authorized user enters a PIN code—making it easier to comply with health care regulations like HIPAA.

Network Scanning Access
To help protect your network from unauthorized e-mail communications, Sharp MFPs support user authentication. Requires users to login before performing any network scanning operations.

Control Device Access Over the Network
To help restrict access to the device over the network, Sharp MFPs support:

- Secure Socket Layer (SSL Encryption)
- IPv6 and IPsec
- IP/MAC address filtering
- Port/Protocol management for maximum security

Data Erase and Encryption
To help protect your data, an optional Data Security Kit is available that encrypts document data in compliance with Advanced Encryption Standards (AES -256 bit). Additionally, the Data Security Kit erases temporary hard drive memory by over-writing the data up to seven times, providing an unprecedented level of assurance.

Tracking and Auditing Information
Sharp offers both standard and optional features that allow our customers to control, access and track usage of each device on the network. These scalable security offerings aim to protect your intellectual property, preserve confidential information and help your business to meet regulatory requirements, such as the Health Insurance Portability and Accountability Act (HIPAA), and the Gramm Leach Bliley Act (GLB).

For additional information visit: www.sharpusa.com/security

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SHARP

April 2010

Sharp Security Suite

TECHNICAL QUESTIONS & ANSWERS

DATA SECURITY

2009 BERTL's BEST

6 Years 2004 - 2009

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For more information, please visit:

www.sharpusa.com/security

I. Executive Summary

This Technical Question & Answer highlights Sharp security offerings available to businesses and government agencies that seek to effectively mitigate the threat of information loss at the MFP level. The risk of data theft or misuse in today's competitive marketplace is real - whether due to a malicious network attack, disgruntled employee or electronic eavesdropping. In response, Sharp has developed a world-class suite of security offerings designed to help safeguard your most valuable asset – information.

Sharp Corporation is ISO 9000 certified, assuring that rigorous manufacturing standards are met in order to consistently deliver safe, clean and efficient products.

The Industry Leader in MFD Security

As the office equipment industry transitioned from analog to digital imaging, Sharp recognized the urgent need to address inherent vulnerabilities posed by network-connected multifunctional devices (MFDs). In doing so, Sharp led the industry with the first Common Criteria-validated security solution, and is currently a leading manufacturer with a 128/256 bit encryption and data overwrite product validated at the highest commercial level for a full line of MFP products (23ppm-110ppm).

Furthermore, first in the industry, Sharp MFPs , comply, meet and exceed the IEEE-2600™-2008 industry Security Standard Requirements. The IEEE-2600-2800 defines security requirements (all aspects of security including, but not limited to, authentication, authorization, privacy, integrity, device management, physical security, and information security) for manufacturers, users, and others on the selection, installation, configuration, and usage of hardcopy devices (HCDs) and systems, including printers, copiers, and multifunction devices (MFDs), and the computer systems that support these devices. For more information see
http://www.sharpusa.com/ForBusiness/DocumentSystems/MFPsPrinters/ProductFeatures/Security.aspx

The Sharp Approach

Sharp takes a comprehensive approach to security by protecting every step in the document lifecycle, from the initial scan to final output and distribution. Fully scalable, Sharp's Security Suite enables Information Technology (IT) personnel to confidently safeguard their infrastructure and MFD installed base, without impacting network traffic or workgroup productivity. Specifically, Sharp MFDs (Segment 2 and up, including color) can be customized to meet unique requirements, help optimizing data confidentiality and integrity. For example, Sharp MFDs support…

- **User and device authentication**
- **Data encryption**
- **Memory clearing and sanitization**
- **Access control, user authorization and restrictions**
- **Architecture that virtually eliminates virus vulnerabilities and provides resistance to denial of service (DoS) attacks**
- **Activity monitoring (compliance auditing)**
- **Port management and filtering**

National Vulnerability Database

As of 2009, Sharp enjoys an enviable position as an MFD manufacturer with no known IT product vulnerabilities listed on the U.S. Government Web site: http://nvd.nist.gov. A quick search of the National Vulnerability Database (NVD) confirms that Sharp MFD products pose no security risks. (For instructions on performing a search, please see *Appendix 4*.)

II. Introduction

Every day, billions of pages of confidential information - medical records, legal documents and financial data – are produced and distributed using sophisticated digital office systems - printers, copiers, facsimile and MFDs. Many businesses and government agencies are unaware that whenever these devices are connected to a network, the risk of unauthorized access and data loss exists. Even as a stand alone device, these "intelligent" systems retain latent document images, potentially exposing sensitive information.

This means that mission-critical data and documents are vulnerable to serious security breaches, yet organizations often focus attention and resources on securing their network, PCs and servers, not peripheral input/output equipment. This leaves the back door open to anyone intent on undermining your business interests – attackers, employees and competitors alike. Whether the threat is internal or external, effective security measures can be implemented on Sharp MFDs to help close potential entry points.

Sharp's Security Strategy
As an industry leader in document security, Sharp Electronics recommends that businesses take a multi-layer approach to securing their documents and data. This has never been more important as the proliferation of e-mail and the Internet has made the need to monitor and safeguard document workflow a top priority.

Failure to take steps to protect information assets has serious consequences, perhaps exposing an organization to liability claims, financial loss, and criminal penalties. Whether its personal or financial information, health records, top-secret government information or sensitive corporate data, it's critical to deploy solutions that minimize the risk of targeted or opportunistic threats.

What's more, federal mandates now require compliance with stringent laws, specifically, the Health Insurance Portability and Accountability Act (HIPAA), Gramm-Leach-Bliley Act (GLB), and Sarbanes-Oxley Act (SOX), to protect medical, consumer and financial records, respectively. Additionally, government agencies must comply with security-relevant policies, such as DISA's Security Technical Implementation Guide Requirements, NSTISSP #11[1] and DoD Directive 8500.2[2].

Sharp's innovative suite of security offerings* help organizations to meet these rigorous compliance requirements by strengthening every link in the workflow chain - in relation to MFDs - by protecting…

- **…the network connection**: Can you prevent MFD-related attacks (viruses and attackers)?
- **…the latent documents and image data**: Can latent temporary data be encrypted/overwritten?
- **…the hardcopy output:** Can passersby be kept from viewing documents on an output tray?
- **…the MFD control panel:** Can access to device features be restricted?
- **…the stored sensitive documents:** Can an unauthorized user intercept sensitive documents?
- **…the "scan-to" function:** Can you effectively close any security hole posed by scanning?
- **…the fax connection:** Can an external attacker use the fax modem as a network entry point?

Unless the answer to each of these questions is a definitive "yes," you'll benefit by reading on. You'll find answers to common questions regarding document security and the Sharp Security Suite that mitigates the risks of conducting business in today's digital age.

***** *For a complete list of standard/optional security features offered on Sharp MFDs, please refer to Appendix 1: Sharp Network and Document Security Chart.*

III. Technical Questions and Answers

A. *Common Criteria (CC) Validation*

In 2001, sharp became the first office technology manufacturer to receive Common Criteria validation for MFD data and information security and currently holds the highest rating in the MFD industry – EAL4 – for the Sharp Data Security Kit (DSK).

Q1. *What is Common Criteria (CC) Validation?*
A1. Evaluations using Common Criteria, an internationally recognized and standardized methodology developed to certify Information Assurance claims, provide a high degree of confidence that security products perform as advertised. More than twenty countries recognize these standardized evaluations, and most of the associated government agencies require CC validation.

In the United States, the program is administered by the National Security Agency (NSA) and the National Institute of Standards (NIST), under the umbrella of the Department of Homeland Security. This National Information Assurance Partnership (NIAP) recognizes international and domestic evaluations conducted in accordance with Common Criteria.

Products validated under the Common Criteria program provide customers with a high degree of confidence that they address the security issues described in the posted evaluation documents. NIAP posts the claims and evaluation reports on their Web site. Listings can be accessed by going to the NIAP Common Criteria Portal: http://www.commoncriteriaportal.org/

Q2. *What is meant by ISO 15408?*
A2. ISO 15408 (International Standard Organization 15408) refers to a set of evaluation standards for security products and systems established by the Common Criteria Project, an international alliance started in 1993. The United States, Canada, Germany, France and the United Kingdom combined separate criteria into a single set of IT security criteria. After extensive public review and trial evaluations, Common Criteria Version 2.1 was produced in August 1999. This set of criteria is simply referred to as ISO 15408.

Q3. *What is the highest validation level Sharp security offerings have achieved?*
A3. Sharp's Data Security Kit (AR-FR1) was the first product of its kind to successfully complete testing and receive Common Criteria validation. Further Sharp has also attained the highest validation level of any office technology manufacturer – EAL4 (AR-FR4), multiple EAL3/EAL3+ validations have been achieved as well for example (AR-FR12M, AR-FR22, MX-FRX1, MX-FRX2, MX-FRX3, MX-FRX5, MX-FRX6, MX-FRX7, MX-FRX8, MX-FRX10, MX-FR11, MX-FR12, MX-FR13, MX-FR14, MX-FR15), in contrast to manufacturers who have achieved a lower EAL rating, Sharp subjects its products to more rigorous evaluation. With the most extensive involvement in the Common Criteria program, Sharp has demonstrated a continued commitment to providing the highest levels of Information Assurance.

***Note**: Evaluations at EAL1 and EAL2 are now typically considered inadequate for U.S. Government users.*

Q4. *What do Evaluation Assurance Levels mean?*
A4. Evaluation Assurance Levels (EAL) provide an indication of the level of confidence users can place in the security claims of a manufacturer. There are seven assurance levels - EAL1 to EAL7. EAL1 to EAL4 certification is available for security technologies that fall into the commercial off-the-shelf (COTS) category, such as copiers, printers, facsimile and MFD systems. At higher levels of evaluation (EAL3 and EAL4), more information on the product is disclosed to the government-controlled labs and the integrity of the security offering is more thoroughly evaluated.

***Note**: For more information on EAL, please refer to Appendix 2.*

Q5. ***What is Sharp's Target of Evaluation (TOE)?***
A5. Sharp's Target of Evaluation (TOE) is an MFD configured with the Data Security Kit (DSK) designed to protect document image data temporarily stored on the hard drive, or in other memory, and data processed by the MFD during copy, scan, print or fax operations. (from more information please refer to appendix 3)

Given the commercial name *Data Security Kit*, the DSK is an upgrade kit that not only adds security functions (e.g. encryption and overwrite) but also controls the major MFD systems and subsystems – print, copy, scan, fax jobs, network control, operating system, memory components (hard drive, RAM, ROM), local user interface, engine and job controller

Since Sharp has a tightly integrated firmware-based MFD architecture, the core software for the entire MFD was subject to the Common Criteria evaluation. Competitors have typically evaluated the software utilities managing their disk overwrite or a particular network, print, access, or fax feature.

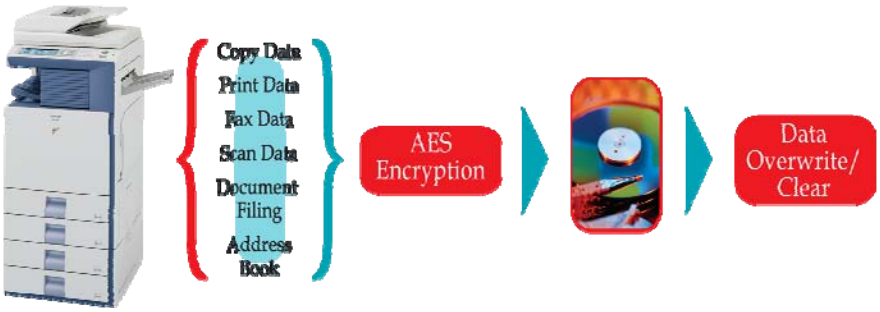

Diagram 1:
One of Sharp TOE functions "Encryption and Overwrite"

Note*: For more information on Sharp's TOE, please refer to Appendix 3. Note that TOE varies by product. For more information on Sharp's DSK, please refer to section C: Protection against Unauthorized Access to Latent Document and Image Data.*

Q6. ***How strong is the Sharp DSK versus competitive security offerings?***
A6. Sharp has the highest EAL validation in the MFD industry - EAL4 – and potentially the broadest TOE. Some competitors are still certifying product at EAL2.

Q7. ***Why is Sharp's DSK the strongest in the industry?***
A7. Sharp more effectively addresses the need to secure document data left in memory. Not only does Sharp employ 256 bit encryption to scramble latent data, the DSK overwrites data stored/buffered in memory up to seven (7) times, with random sequences of 1s and 0s. This exceeds the three (3) overwrites supported by several competitors. Sharps newest validations now also include IP and MAC address filtering as well as SSL implementations, providing additional assurance for secure network connectivity.

Q8. ***How many Sharp DSKs are currently available?***
A8. For details on Sharp security offerings, including compatible Sharp MFDs and EAL ratings, please refer to *Appendix 1: Sharp Network and Document Security Chart*.

Q9. ***Is there a Common Criteria Validation Web site where I can learn more?***
A9. Yes. Visit http://www.commoncriteriaportal.org/theccra.html to obtain links to numerous sites that include products in evaluation, validated products, and much more.

B. *Protect Network against Malicious Files (.EXE, Viruses, Worms, etc.)*

Securing a company's computer network against virus attacks via the Internet is a significant issue in both the private and public sectors. If trouble strikes, crucial files could be lost or corrupted, productivity could be hurt and communication lines might be blocked and resources disabled (Denial of Service).

Q1. ***Can Sharp MFDs prevent PCs from connecting behind the firewall to transmit executable programs (malicious code) or initiate a Denial of Service attack?***
A1. Sharp MFDs use unique embedded firmware* that is not based on the Windows®/Linux® operating system. Therefore, the Sharp MFD's internal systems are not subject to the same virus vulnerability as Microsoft and Linux operating systems. Sharp's unique architecture provides no user interface and cannot execute downloaded files or commands sent by an attacker to compromise the system.

***Note**: This applies in most cases. The only exception is when the optional EFI™ print controller is installed.*

Q2. ***Are security patch downloads required on a regular basis?***
A2. No. While competitors are struggling to provide security patches to protect their customers, Sharp customers are virtually immune to these threats, thus are freed from the onerous task of installing security patches.

Q3. ***Is it possible to use MFD credentials from one device to attack another device?***
A3. Sharp MFDs support secure device authentication (see Q4) to block attackers from using MFD credentials to infiltrate other devices on the user's Intranet (corporate network). For instance, if device authentication is enabled, every e-mail address query (via an LDAP directory server) must first be authenticated, which verifies that the MFD used to send e-mail is an authorized device on the network. User authentication also requires that the user be identified, not just the MFD; the operator must log in with a valid username/password.

Q4. ***How does Sharp authenticate devices on the network?***
A4. Sharp offers secure device authentication that utilizes Kerberos, 802.1x, Digest-MD5 (for LDAP-v3), IPSEC and SSL (Secure Socket Layer with Digital Certificate) protocols. Kerberos, Digest-MD5 and SSL are network authentication protocols that use private-/public-key cryptography to provide strong authentication for client (MFD)/server applications. Also see Q7.

Q5. ***What security features are supported by Sharp's Secure Network Interface?***
A5. Sharp's Network Interface supports four key security features:

1. **IP address filtering**: Limits access to select IP addresses.
2. **MAC address filtering**: Limits access to specific computers, regardless of IP address.
3. **Protocol management**: Specific communication protocols can be disabled (e.g., TCP/IP (IPV4 and IPV6), NetBEUI, NetWare, EtherTalk).
4. **Port management**: Specific communication ports address can be changed individually as well as disabled (e.g., IPSEC, SSL, 802.1x, SMTP, LDAP, HTTP, FTP, LPD, IPP, Telnet, JCP, RARP, and POP3).

These security features greatly reduce vulnerability to both internal and external threats. When coupled with password protection, this means the administrator still has the convenience of remote setup while minimizing the risk of an outside attack. The combination of MAC and IP filtering controls who is able to connect to (or detect) a Sharp MFD on a network. A powerful access tool, filtering also controls which devices the MFD can communicate with, such as mail servers, file servers or computers.

Q6. ***Which secure network protocols do Sharp MFDs support?***
A6. Sharp MFDs secure network traffic by encrypting data using IPSEC, SSL, SMB and/or SNMPv3 protocols.

Q7. ***Why are IPSEC and SSL protocols important?***
A7. IPSEC and SSL (Secure Socket Layer) secure data communication over the network by authenticating the client (MFD) and server using private/public keys to encrypt/decrypt data. Data is rendered useless to anyone intent on intercepting communication to/from the Sharp MFD. Sharp units support importing of certificates from VeriSign®, RSA®, and others, assuring that the Sharp MFD will operate as a compatible, secure communication system on the user's network.

Q8. ***Why is SNMPv3 Protocol important?***
A8. SNMPv3* is a secure protocol that is used to retrieve maintenance/accounting (click counts) information from the MFD. An interoperable protocol for network management, SNMPv3 provides secure access to devices using a combination of authentication and encryption. The security features provided in SNMPv3 are:

- **Message integrity**: Ensures that a packet has not been tampered with in transit.
- **Authentication**: Determines that the message is from a valid source.
- **Encryption**: Scrambles the contents of a packet to prevent it from being seen by an unauthorized source.

**** Note**: The previous version, SNMPv2, did not encrypt the administrator's password, and other sensitive information sent over the network, preventing many government agencies from using administrative software.*

C. *Protection against Unauthorized Access to Latent Document and Image Data*

Sharp raises the bar by offering multiple layers of volatile memory, as well as hard drive data security. This includes both encryption and overwrites.

Q1. ***What measures can be employed to protect against unauthorized access to latent data retained on the device's memory or hard drive?***
A1. By installing the Sharp Data Security Kit businesses and government agencies can significantly reduce the threat of someone gaining access to confidential documents stored on the device's hard drive or in any memory module.

Q2. ***What security functions are supported by the DSK's Document Filing feature?***
A2. The secure document storage capability of Sharp MFDs, called Document Filing, employs various security measures to safeguard data, namely:

- **Access control**: Authentication is required before scanning.
- **Data backup**: Back up is supported using a secured Web page.
- **Confidential file**: Confidential files are password-protected.
- **Confidential folder**: Confidential folders are password-protected.
- **Encryption/Overwrite**: The Sharp Data Security Kit automatically encrypts the stored files and encrypts and overwrites temporary data.
- **Property change**: The property of saved files can be switched between *Share*, *Protect* or *Confidential*.

Q3. ***How does the Sharp Data Security Kit work?***
A3. Sharp's Common Criteria validated Data Security Kit offers multiple layers of security. First, all latent image data within the MFD is encrypted (using an AES algorithm [see Q5]) before being written to the hard drive, RAM or Flash memory. When a document is printed, copied, scanned or faxed, the temporary data stored/buffered in memory is overwritten up to seven (7) times, rendering it unrecoverable. Sharp competitors typically overwrite just three (3) times. It's the combination of encryption and overwrites that sets Sharp apart.

Note*: For information on specific Sharp MFDs that can be equipped with the Data Security Kit, please refer to Appendix 1.*

Q4. ***Is data protected if the overwrite process is interrupted, for instance, a paper misfeed, power failure or operator-related issue arises?***
A4. Sharp's Data Security Kit is unique in that the latent image data is first encrypted. Therefore, the data is still protected even if the overwrite sequence is interrupted due to a service event. Most competitors do not provide encryption back up. Furthermore, when the MFD is turned on, the DSK automatically overwrites all temporary data.

Q5. ***How does the Sharp Data Security Kit encrypt data and why?***
A5. To secure spooled or stored data, Sharp uses Advanced Encryption Standard (AES) (128/256 bit), a widely used encryption algorithm. Encryption is a critical layer of security that is vital to protect latent image data and documents stored on the hard drive or in memory. Without encryption, network-connected MFDs (and other devices) would be still vulnerable to information loss or targeted theft. Not only are jobs in process at risk, documents stored in MFD mailboxes – for printing of frequently-used documents or secure private printing – also need to be protected.

D. *Protection against Unauthorized Access to Control Panel and Scan to E-mail Functions*

The prospect of an employee or others scanning a corporate client list or other sensitive information to a competitor is a threat every business faces. To mitigate this risk of information loss or unauthorized use, Sharp MFDs support a number of security features that enable businesses to restrict and monitor all device operation.

Q1. ***What measures can be employed on Sharp MFD systems to prevent unauthorized users from accessing control panel functions?***
A1. Sharp takes a comprehensive approach to securing valuable MFD assets by providing both device access control and monitoring tools to help avoid the risk that resources are misused or abused.

Access Control:

- **User authentication**: Authentication using CAC – Common Access Card or/and to the LDAP server or/and to Active Directory (or/and other authentication servers) identifies the sender and ensures that only authorized users (with a valid pin/username/password) can access setup, maintenance and/or MFD functions.
- **Account codes** (see Q2).
- **User/group profiles** (see Q3).
- **Password protection** (See Q4)

Device Monitoring:

- **MFD log file**: All MFD activity can be logged (To, From, When, What [file name]) to create an audit trail, ensuring compliance with privacy regulations set forth by the federal government.

Q2. ***What are Account Codes?***
A2. Account Codes are a standard feature on all Sharp MFDs that track device usage from the control panel. The user must enter either a valid 5-digit code or user credentials, including a strong password. Each department can have their own code. A report can be generated that includes usage by Account Code.

Note*: Depending on MFD model, 200 to 1000 Account Codes are available.*

Q3. ***How do Profiles work?***
A3. User and Group Profiles protect the Sharp MFD from unapproved usage and/or possible tampering by specifying functions that can be accessed. For instance, one user and/or group can be limited to copy and fax functions, locking out scan to e-mail and printing. Or to control supply costs, a profile can restrict access to color copying and/or printing.

Q4. ***Why is strong password protection important?***
A4. Using up to 32 alphanumeric characters, including special symbols (e.g., #&*<>), Sharp's strong password protection makes the MFD highly secure. And to add another layer of protection, anyone that enters three invalid admin or document filing passwords can be locked out.

E. *Protection against Unauthorized Retrieval of Hardcopy Output*

Sensitive documents sitting on an MFD's output tray pose another challenge. It's not uncommon that those pages are accidentally or intentionally removed, perhaps falling into the wrong hands.

Q1. ***What measures can be taken on Sharp MFDs to prevent viewing or removal of document from the output tray?***
A1. Confidential Print and Confidential Fax are standard Sharp features that help prevent users from accessing sensitive documents without appropriate identification. The user enters an 8-digit (MX Series) or 5-digit (AR Series) pin from the control panel before the print/fax file is released. Standard firmware also supports encrypted PDF files. Installation of the Sharp DSK encrypts all stored files.

Q2. ***How does the Anti-copy feature work?***
A2. When this feature is enabled, the Sharp MFD will embed a nearly invisible watermark within a first-generation copy made on the MFD. If that hardcopy is subsequently copied on a Sharp MFD with DSK, the MFD will terminate the copy operation and display a warning message.

F. *Protection against Interception of Sensitive Data and Documents*

As mentioned previously, the Internet poses many security challenges. To reduce vulnerable to those with malicious intent, Sharp locks out the "bad guys" by securing electronic files communicated over the network. For example, tools to "sniff" passwords off the network are in common use today. Effective measures, however, can be taken to virtually eliminate this threat.

Q1. ***What measures can be employed on Sharp systems to protect sensitive documents en route to / from the MFD?***
A1. Sharp also encrypts network traffic using IPSEC, SSL, SMB and/or SNMPv3 protocols, thus blocking any attackers trying to sniff the network traffic of companies that have implemented network encryption.

Q2. ***How does Sharp device authentication help protect documents on the network?***
A2. Sharp offers secure device authentication protocols that assist in preventing an attacker ("man in the middle") from tapping into data/document files, changing the content, and then redirecting the file – all while appearing to come from an "authorized" device. (Also see section B, Q4 and Q7.)

Q3. ***Can PDF files be encrypted?***
A3. Yes. Sharp MFD users can send encrypted PDF files (scan and print) over the network. Only those recipients with the correct passcode can open the file. PDF encryption is important for healthcare companies, financial firms, education institutions and many other that must comply with stringent federal, state or local mandates.

Q4. ***How are print files secured when sent over the network?***
A4. Print files can be encrypted using IPSEC or IPP over SSL technology, also known as IPPS. By using IPSEC and SSL technologies, the Sharp MFD establishes a secure session with the workstation, guaranteeing message privacy and integrity.

Q5. ***How does port management help protect documents on the network?***
A5. Port management is the practice of selectively enabling/disabling ports and protocols, along with IP/MAC address filtering, it essentially provides an internal MFD firewall and insulates the MFD from TCP/IP and other port-based attacks, including internal attacks from malicious users. In short, port management, and IP/Mac filtering, assists in preventing unwanted device communication.

G. *Protection against Misuse / Abuse of "Scan-to" Functions*

Sharp MFDs support a variety of "scan-to" features. Users can easily scan hardcopy documents directly to e-mail addresses, a folder, a FTP site, and even a USB memory thumdrive. Due to the potential for directing an e-mail or file to an unauthorized destination, Sharp has implemented a number of important scan-to safeguards.

Q1. ***How does Sharp protect against misuse/abuse of scan-to features?***
A1. To effectively close any security holes posed by scan-to operations, Sharp takes the following measures:

- **Prevent anonymous "impersonated" e-mail**: Sharp prevents anonymous e-mail messaging; e-mails are sent with the sender's information, without any way to bypass the system using "From" field spoofing techniques
- **E-mail log file**: The e-mail log files track To, From, When, What (file name), so scan-to activity can be monitored for any sign of compromise.
- **Scan to USB**: A restriction can be placed on scan-to-USB functions, preventing information leaks using this popular (and easily concealed) memory storage device.
- **Scan to FTP**: With Sharpdesk 3.21 or later version, a secure FTPS (SSL) connection can be obtained using a FTPS tunnel.
- **Scan encrypted PDF file**: Securely scan encrypted and password-protected files directly from the Sharp MFD without the need for other software/products.
- **Secure protocol support**: Select Sharp MFDs support SMB, IPSEC, LDAPS, FTPS, SMTPS, POP3S protocols for enhanced scanning security.
- **User authentication/encryption/digital signature with CAC card:** Sharp MFPs can enable the scanning function only to DoD CAC card holders that authenticate themselves. Furthermore users can select to digitally signed and/or encrypt (256 AES encryption) the scan files using DoD user certificates. (Requires CAC option)

Q2. ***How do you prevent "impersonated" e-mail transmission?***
A2. User authentication prevents someone from entering a fictitious e-mail address. A user must enter a valid username/password (authenticate), before being granted access to scanning functions.

Q3. ***Can scan to e-mail/FTP/desktop/folder services be enabled/disabled?***
A3. Yes. It is possible to enable/disable sending of scanned images to one or more destinations by selecting "Allowed" or "Prohibited" via the admin screen. By blocking a particular feature, you can help prevent users or groups from directing possibly sensitive files to unauthorized destinations.

Q4. ***Are there other ways to secure scan-to operations?***
A4. Requiring that users enter login credentials (username/password) at the control panel is another away to help prevent unauthorized use of scanning functions, and provides an audit trail in the event of questionable MFD activity.

Q5. ***Why are log files so important?***
A5. Log files track all job-related MFD activity, providing another tool that better enables businesses to comply with federal mandates regarding privacy.

H. *Protection against Fax Threats*

An MFD's fax function works by converting scanned hardcopy into electronic image data, for transmission to a remote site over ordinary phone lines. With an external connection to the PSTN (Public Switched Telephone Network), IT personnel are rightfully concerned about attackers circumventing the firewall.

Q1. ***Is Sharp's fax offering Common Criteria validated?***
A1. Yes. Since the Sharp DSK includes firmware for fax functionality, fax security is addressed in the Common Criteria validation (at EAL3, EAL3+ and EAL4).

Q2. ***Can the fax telephone line be used to gain access to internal systems of the Sharp MFD and, ultimately, the network?***
A2. No. Sharp's MFD architecture provides a logical separation between the fax telephone line and Local Area Network (LAN). It is, therefore, virtually impossible for attackers to gain access to the MFD's internal systems and the network. Important points to remember include the following:

- The fax modem controller is separate from the MFD's LAN network controller.
- The fax function is logically independent of the other MFD functions.
- The fax modem is fax-only (Class I, not data/fax, thus responds only to fax transmission protocols, prohibiting all others - including data communications).
- The fax modem controller has no mechanism to support any external code or executable file.

Sharp's MFD architecture prevents network infiltration via a fax modem. This means common executable viruses, and other similar infectious software, cannot be used to compromise MFD security or disrupt network operations.

Q3. ***What is a Class I fax modem?***
A3. A Class I fax modem is a modem with extensions to their command sets that allow the modem to communicate with Group 3 fax machines. A Class I modem only supports fax image communication, not data. This means that a Class I fax modem does not have the ability to pass executable files; an attacker cannot use the Sharp fax modem as a network entry point.

Q4. ***Can Sharp's fax modem protect against junk fax?***
A4. Yes. Sharp's fax modem supports a feature called *Ignore Junk Fax* that enables the user to block junk fax from specified fax numbers, thereby eliminating the annoyance and loss of valuable resources, i.e., time and consumables.

Q5. ***How does the Sharp Data Security Kit help protect sensitive information received via fax?***
A5. Sharp's DSK encrypts image data coming from the fax modem. After the received message is printed, the data is automatically erased. Without encryption, businesses run the risk that attackers can access sensitive documents residing in the internal memory.

Appendix

1. Sharp Network and Document Security Chart

	Black and White						Color					
General	AR-M237/M277 AR-M257 /M317 Series	AR-M355/ M455 Series	MX-M350/ M450 Series	AR/MX-M550/ M620/M700 Series	MX-M283/M363 M453/M503 Series	MX-M850/ M950/M1100 Series	DX-C310W DX-C400 DX-C311/ DX-C401 MX-C311/ MX-C401 Series	MX-2300N/ 2700N Series	MX-2600N/ 3100N Series	MX-3501N/ 4501N/MX-3500N Series	MX-4100N/ 4101N/MX-5001N Series[8]	MX-5500N/ 6201N/7001N/ 6211/7001 Series
Speed (PPM)	23/27 ppm 25/31 ppm	35/45ppm	35/45ppm	55/62/70ppm	28/36/45/50ppm	85/95/110ppm	31/40 b/w / 31/40 color ppm	23/27 b/w / 23/27 color ppm	26/31 b/w / 26/31 color ppm	35/45 b/w / 35 color ppm	41/50 b/w / 41/50 color ppm	55/62/70 b/w / 41 color ppm
Functions[1]	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax	Print/Copy/Scan/Fax
Printer Controller	AR-P17/AR-P27	Standard[2]	Standard[2]	Standard[2]	Standard[2]	MX-FEX2, MX-FKX4	Standard	Standard	Standard	Standard	Standard	Standard
Network Interface Card	AR-P17[3], AR-NC5J[3] AR-P27	Standard[2]	Standard[2]	Standard[2]	Standard[2]	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Network Scanning Expansion Kit	MX-NSX1	MX-NSX1	MX-NSX1	MX-NSX1	Standard[4]	MX-NSX1	Standard	Standard	Standard	Standard	Standard	Standard
Facsimile Expansion Kit	AR-FX7	AR-FX12	AR-FX12	AR-FX8	MX-FXX2	MX-FXX1	MX-FXX3	MX-FX1	MX-FXX2	MX-FX2	MX-FXX2	MX-FX3
Hard Disk Drive	—	Standard[4]	Standard[4]	Standard	Standard[4]	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Security Features												
Access Control Security												
Account Codes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Comprehensive Embedded User Access Control	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
User Authentication	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP	LDAP
Confidential Print	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Follow You Printing™	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]
Card Access Control/CAC	Optional[7]	Optional[7]	Optional[7]	Optional[7]	Optional[7, 16]	Optional[7]	Optional[7, 16]	Optional[7]	Optional[7, 16]	Optional[7]	Optional[7, 16]	Optional[7]
Fax Security												
Confidential FAX	—	—	—	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Separation Between FAX and Network Connections	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Filter Junk Fax	—	—	—	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data Security												
Commercial Data Security Kit	AR-FR12 AR-FR24U, AR-FR25U	AR-FR22U for U Series AR-FR21U for N Series	MX-FRX7U for U Series MX-FRX6U for N Series	AR-FR11U MX-FRX5U	MX-FR15U for U Series MX-FR14U for N Series	MX-FRX8U	MX-FR12U MX-FR13U MX-FR13U	MX-FRX1U	MX-FR10U	MX-FRX2U	MX-FR11U	MX-FRX3U MX-FRX9U
Common Criteria Data Security Kit	AR-FR12M AR-FR24, AR-FR25	AR-FR22U for U Series AR-FR21U for N Series	MX-FRX7 for U Series MX-FRX6 for N Series	AR-FR11 MX-FRX5	MX-FR15[12] for U Series MX-FR14[12] for N Series	MX-FRX8	MX-FR13 MX-FR13	MX-FRX1	MX-FR10	MX-FRX2	MX-FR11	MX-FRX3 MX-FRX9
EAL Validation Level	EAL3+	EAL3+ for U Series EAL3 for N Series	EAL3+ for U Series EAL3 for N Series	EAL3	EAL3	EAL3	EAL3	EAL3+	EAL3	EAL3+	EAL3	EAL3+
Data Security Kit Features												
Functions[1]	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax	Copy/Print/Scan/Fax
Encrypts Image Data	Fax data only	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]	Yes[11]
Hard Disk Overwrite	Not Applicable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RAM Overwrite	Yes	Yes[13]	Yes[13]	—	Yes[13]	—	—	—	—	—	—	—
FAX ROM Overwrite	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Resistance to (DOS) Denial of Services	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Resistance to Common Virus Attacks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Document Control (Anti-Copy)	—	—	—	—	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lock User after 3 Retries	—	—	—	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hard Drive Overwrite Features	Not Applicable	—	—	—	—	—	—	—	—	—	—	—
Encryption (# of bit)	—	128	128	128	256	128	256	128	256	128	256	128
# Overwrites	—	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7	Up to 7
Overwrite Method	—	Random Data	Random Data	Random Data	Random Data	Random Data	Random Data	Random Data	Random Data	Random Data	Random Data	Random Data
Automatic Overwrite after each Job	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Automatic Overwrite at Start Up	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manual Overwrite	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Document Filing	Not Applicable											
Protection Method without DSK	—	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection	Folders and/or Document level password protection
Protection Method with DSK	—	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption	Adds encryption
Network Security												
IP Filtering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MAC Address Filtering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Port Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Password Protected Setup	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPSec, IPv6, SSL, TLS	Yes[14]	No	Yes	Yes[14]	Yes	Yes	Yes	Yes[17]	Yes	Yes[17]	Yes	Yes[17]
802.1x, IEEE 2600.2008[15]	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No
SNMPv3	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SMB	Yes[14]	No	Yes	Yes[14]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Audit Trail Security												
Embedded Log File	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Equitrac Copy Audit Trail	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]	Optional[5,6]
Equitrac Print Audit Trail	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]	Optional[5]
Scan Audit Trail												
Scan to E-mail	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Document Security												
Scan Encrypted PDF file	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Print Encrypted PDF file	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1 Some Functions Require Optional Equipment
2 Standard on N Series. MX-M350/M450U Series Requires (MX-NBX3) Printer Controller, AR-M355/ M455U Series Requires (AR-P21) Printer Controller, MX-M550/M620/M700U Series Requires (MX-NBX1), AR-M550/M620/M700U Series Requires (AR-P19) Printer Controller, MX-M283/M363/M457/M503 requires MX-PB10
3 RJ45 Network Interface Included with the Printer Controller, Certain Operating Systems and Protocols May Require (AR-NC5J) Option
4 Standard on N versions
5 Requires Equitrac Office or Equitrac Express
6 Requires Equitrac Embedded for Sharp's MFPs (for 35ppm and up) or PageControl
7 Common Access Card with DCL310S or 3rd Party Applications with Sharp OSA Technology (for MFPs 35 ppm and up)
11 FIPS 197 AES Encryption
12 Available 2010
13 For MFP without Hard Disk
14 For AR-M257/M317 and MX-M550/M620/M700
15. Meet standard requirements
16. Common Access Card with MX-EC50 for N series and MX/DX-C311/C401
17. Only for SSL/TLS

Appendix

2. Common Criteria – EAL3+ / EAL4 versus EAL2

In 2001, sharp was the first vendor in the industry to offer common criteria EAL2 validated product (Sharp Data Security Kit AR-FR1). Nearly a half-decade ago, EAL2 appeared to be adequate for less sophisticated MFDs. Today that has changed.

EAL is an Evaluation Assurance Level, not certification. It is a measure of how confident a user can be with the vendor's advertised performance of their specific certified Target of Evaluation (TOE). Vendors are validated against the security claims they make in a Common Criteria document named the Security Target (ST). This document is posted online for all certified products, along with the Validator's Report, which provides a clear overview of exactly what a vendor has certified.

Higher security validation EAL3+/EAL4 provides higher assurance that the security solutions were implemented properly. This means that the Common Criteria validation agency will not only check the product against the vendor's claims but also check the schematics and the firmware code to ensure that the proper implementation and proper security protection methods were used. EAL2 is one of the lowest validation processes, requiring minimum checks against the vendor's claim of security.

EAL3+/EAL4 provide assurance by an analysis of the security functions, using a functional and interface specification, guidance documentation, and the high-level design of the TOE to understand the security behavior. Therefore, EAL3+/EAL4 represent a meaningful increase in assurance from EAL2 by requiring more complete testing coverage of the security functions and mechanisms and/or procedures that provide some confidence that the TOE will not be tampered with during development.[3]

The following are the main validation areas that are not included in EAL2 validation:

- **Configuration Management (CM)**. Configuration Management (CM) is one method or means for establishing that the functional requirements and specifications are realized in the implementation of the TOE. In EAL3+/EAL4, applying Configuration Management to these additional items provides added assurance that the integrity of TOE is maintained, e.g., access control assurance requirements are added to the CM system.

  At EAL2 access control is not tested, which means that unauthorized users can possibly gain access to MFD assets. In contrast, Sharp products were examined to make sure that only authorized users can access MFD assets.

  ***Note**: ISO 9000 certification has nothing directly to do with security, as suggested by some vendors. ISO 9000 is related to Quality Assurance, confirming that the company has very structured and controlled manufacturing and management practices. This is critical if secure products are to be delivered with integrity. Sharp Corporation is ISO 9000 certified.*

- **Development** – In this stage, the design document was examined. At EAL3+/EAL4, the relationships between the various internal and external components are examined in more detail for relevance to security. Sharp has included all the security components for validation. The internal interaction is important to examine as a complete product. In EAL2, components are examined separately, instead of as an integrated product. As a result, some vulnerabilities may be overlooked.

- **Guidance Documents** - The guidance documents class provides the requirements for user and administrator guidance documentation. For the secure administration and use of the TOE, it is necessary to describe all relevant aspects for the secure application of the TOE. Guidance documentation includes user and administrator guidance[3]. In this area there is no difference between EAL2 and EAL3.

- **Life Cycle Support** – Life Cycle Support is an aspect of establishing discipline and control in the processes of refinement of the TOE during its development and maintenance. Confidence in the correspondence between the TOE security requirements and the TOE is greater if security analysis and the production of the evidence are done on a regular basis, as an integral part of the development and maintenance activities[3].

  Life Cycle Support is not required at EAL2. At EAL3+/EAL4, the physical security procedures of the development location and any procedures used to select development staff is being evaluated. It is important to control the development environments to make sure quality development control was in place when the TOE was developed. This is an example of where ISO 9000-certified vendors, like Sharp, have some advantage.

- **Testing** – Testing helps to establish that the TOE security functional requirements are met. Testing provides assurance that the TOE satisfies at least the TOE security functional requirements, although it cannot establish that the TOE does no more than what was specified. Testing may also be directed toward the internal structure of the TSF, such as the testing of subsystems and modules against their specifications[3].

  At EAL3+/EAL4, the developer is required to demonstrate that the tests that have been identified, include testing of all of the security functions, are described in the functional specification. The analysis should not only show the correspondence between tests and security functions, but should also provide sufficient information for the evaluator to determine how the functions have been exercised[3].

  The extra step that Sharp took with EAL3+/EAL4, and the extra validation to all the MFD components, including network and scanning, provide assurance for secure operation between subsystems. Unauthorized users cannot access assets.

- **Vulnerability Assessment** – This class addresses the existence of exploitable covert channels, the possibility of misuse or incorrect configuration of the TOE, the possibility to defeat probabilistic or permutational mechanisms, and the possibility of exploitable vulnerabilities introduced in the development or the operation of the TOE[3].

  At EAL3+/EAL4, the objective is to ensure that misleading, unreasonable and conflicting guidance is absent from the guidance documentation, and that secure procedures for all modes of operation have been addressed. Insecure states should be easy to detect.

  Sharp's DSK has a strong admin and user security control that was examined and tested along with the other security functions. Leaving the validation at EAL2 can mean that a possibly vulnerable interface may not be tested and therefore mistakenly validated as securely implemented. Sharp security products are tested for vulnerabilities in networked environments as illustrated in *Diagram 4*. It is recommended that users check competitive vendors' products and compare the test environment.

Appendix

3. Common Criteria Validation (What actually was included in the validated product)

CC program defines the Target of Evaluation (TOE) as a set of software, firmware and/or hardware that may be an IT product, a part of an IT product, a set of IT products, a unique technology that may never be made into a product, or a combination of these.

Each vendor selects/defines this TOE in their Security Target when they apply for CC validation.

Given the commercial name *Data Security Kit*, Sharp validates the DSK as the specified TOE. The DSK included the firmware that controls the major MFD systems and subsystems - fax card, network control, operating system, memory components (hard drive, RAM, ROM), local user interface, engine and job controller.

Competitors have typically evaluated the software utilities managing their disk overwrite or a particular network, print, access, or fax feature.

In other words, the Sharp DSK consists of MFD firmware, with enhanced security features, that protects the main assets of the MFD, while also protecting user data and user credentials stored in the MFD (temporarily or permanently). No matter which access port the attacker attempts to use (fax port, network port or walk up UI), Sharp has an offering designed to help block potential attackers from penetrating and accessing MFD assets.

Typical Sharp Data Security Kit implementations are shown in *Diagram 3*. For illustration purposes, the MX-FRX2 Data Security Kit is installed within a mid-range MFD (e.g., 40-/50-ppm). The certified Data Security Kit is actually the core control software for the entire MFD dealing with all operational functions and addressing RAM, flash and hard drive memory, when hard drives are used.

Important: Many Sharp copiers are available in multifunctional configurations (print/copy/scan), both with and without a hard drive. Many government agencies prefer models without hard drive for classified document processing applications. In these models all latent data is erased when the device is turned off. Adding DSK will provide encryption and overwrite for better protection

Diagram 3 shows that the Data Security Kit, in this case the MX-FRX2, is on the unit's main controller board and deals with all input/output activity associated with memory. This includes the user interface, network and local interfaces to the imaging engine and paper handling systems.

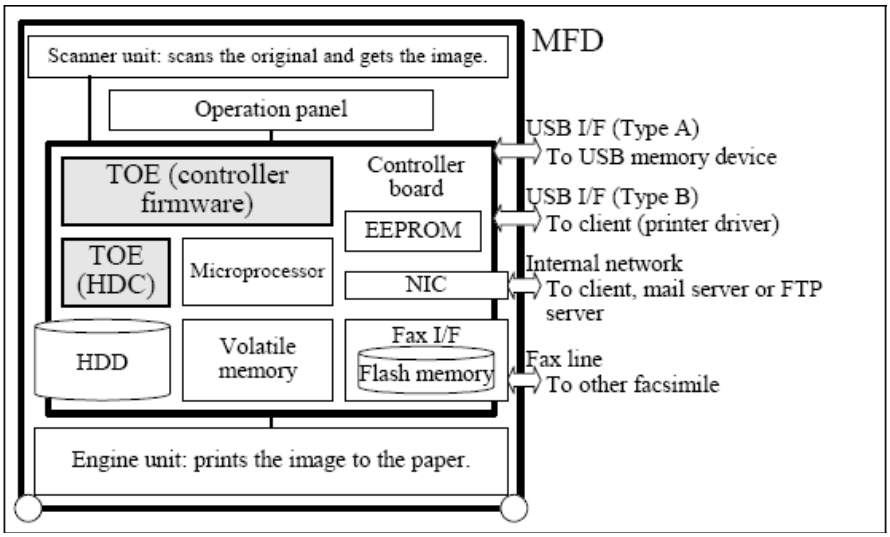

Diagram 3: Sharp DSK Implementation within Mid-range MFD.

Diagram 4 shows a usage environment for the TOE. It includes the external network, fax lines, clients and servers. This confirms the Sharp products are validated for use in real world networked environments where all MFD capabilities are deployed.

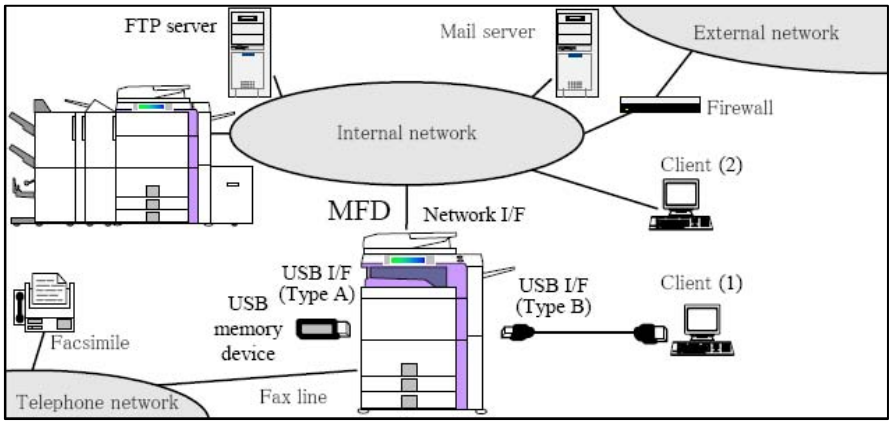

Diagram 4: Usage Environ-ment of the TOE

Diagram 5 provides the configuration layout of the Evaluator Independent Testing (EIT). This also confirms that Sharp's MFD network interfaces are tested by the validation lab.

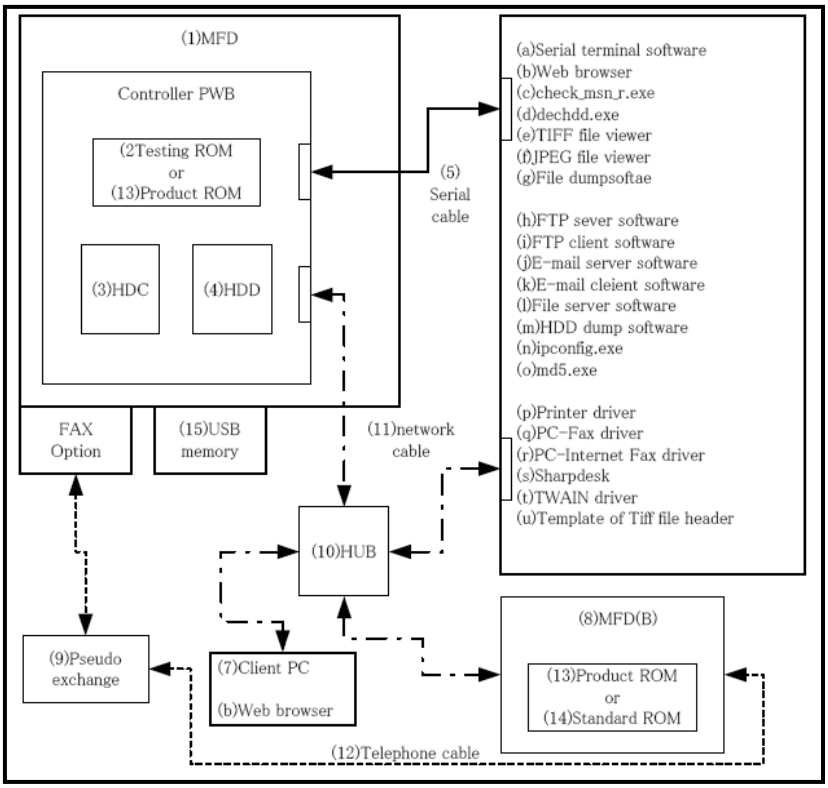

Diagram 5:
Configuration of EIT

Appendix

4. National Vulnerability Database

The National Vulnerability Database (NVD) is a comprehensive cyber-security vulnerability database that integrates all publicly available U.S. Government vulnerability resources and provides references to industry resources. No Sharp MFD products are currently listed on this site, unlike key competitors' MFDs.

To search for vulnerable products on the NVD Web site, proceed as follows:

1. Open your Web browser.
2. Enter: **http://nvd.nist.gov**.
3. Select CVE and CCE Vulnerability Database Advanced Search
4. Select Vendor, e.g., Sharp or MFD competitor name.
5. Press **Enter** (or click **Search All**). See sample screen below.
6. Perform another search or close your browser.

Sponsored by
DHS National Cyber Security Division/US-CERT
NIST
National Institute of Standards and Technology
National Vulnerability Database
automating vulnerability management, security measurement, and compliance checking
Vulnerabilities
Checklists
Product Dictionary
Impact Metrics
Data Feeds
Statistics
Home
SCAP
SCAP Validated Tools
SCAP Events
About
Contact
Vendor Comments
Mission and Overview
NVD is the U.S. government repository of standards based vulnerability management data. This data enables automation of vulnerability management, security measurement, and compliance (e.g. FISMA).
Resource Status
NVD contains:
38615 CVE Vulnerabilities
128 Checklists
182 US-CERT Alerts
2345 US-CERT Vuln Notes
2517 OVAL Queries
17819 CPE Names
Last updated: Tue Sep 08 11:25:23 EDT 2009
CVE Publication rate:
Search Results (Refine Search)
There are 9 matching records. Displaying matches 1 through 9.
CVE-2009-1656
Summary: Xerox WorkCentre and WorkCentre Pro 232, 238, 245, 255, 265, 275; and WorkCentre 5632, 5638, 5645, 5655, 5665, 5675, 5687, 7655, 7656, and 7675 allows remote attackers to execute arbitrary commands via unknown attack vectors, aka "command injection vulnerability."
Published: 05/16/2009
CVSS Severity: 10.0 (HIGH)
CVE-2008-6436
Summary: Cross-site scripting (XSS) vulnerability in the Web Server in Xerox WorkCentre 7132, 7228, 7235, and 7245 allows remote attackers to inject arbitrary web script or HTML via unspecified vectors.
Published: 03/06/2009
CVSS Severity: 4.3 (MEDIUM)
CVE-2008-5225
Summary: Multiple cross-site scripting (XSS) vulnerabilities in Xerox DocuShare 6 and earlier allow remote attackers to inject arbitrary web script or HTML via the PATH_INFO to the default URI under (1) SearchResults/ and (2) Services/ in dsdn/dsweb/, and (3) the default URI under unspecified docushare/dsweb/ServicesLib/Group-#/ directories.
Published: 11/25/2008
CVSS Severity: 4.3 (MEDIUM)

End Notes:

[1] *The National Information Assurance Acquisition Policy #11 is a national security policy governing the acquisition of IT products that might be used to process national security sensitive information.*

[2] *Department of Defense (DoD) Directive 8500.2 establishes policies and assigns responsibility under Section 2224 of title 10, United States Code to achieve DoD information assurance (IA) through a defense-in-depth approach that integrates the capabilities of personnel, operations, and technology, and supports the evolution to network centric warfare.*

[3] *Source: Common Criteria Assurance Level Part III*

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Specifications are subject to change without notice.

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MFP-SB-431

SERVICE BULLETIN

Models: MX-M260/MX-M310,MX-PB12

Priority: Medium

Date: July 2010

Subject: **ROM Upgrade (3) B00 / (4) B01**

Description: We have upgraded the MCU and OPE ROM in June 2010, and PRINTER (PCL) ROM in July 2010.

Details: Please see below and on the following pages for more information about this upgrade.

No.	Target model	Control No.	MCU	IMC	OPE	GDI	PCL	Action
(3)	MX-M260	B00	V02.03	V05.00	V01.01	V01.04	-	Mid-'10/6
	MX-M310			V01.00				
(4)	MX-PB12	B01	-	-	-	-	01.08.00-	'10/7
Reason for change:								
Upgrade for compatibility with other markets.								

Complete Engine Firmware			
Models	MXM260		
Release Type	Production	Control ROM ID	B00
Release Date	July 2010	File Name	A2R0203EFS_26.dat
Versions			
MCU IMC OPE	02.03 05.00 01.01		

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Complete Engine Firmware			
Models	MXM310		
Release Type	Production	Control ROM ID	B00
Release Date	July 2010	File Name	A2R0203EFS_31.dat
Versions			
MCU IMC OPE	02.03 01.00 01.01		

Printer Controller Firmware			
Models	MXPB12 (Option for MXM260, MXM310)		
Release Type	Production	Control ROM ID	B01
Release Date	July 2010	File Name	tl2rmain010800.sfu
Versions			
PRINTER	01.08.00		

ROM Version History

No.	Target model	Control No.	MCU	IMC	OPE	GDI	PCL	Action
(1)	MX-M260	A01	V02.00	V05.00	V01.00	V01.04	-	'09/12
	MX-M310			V01.00				
	MX-PB12		-	-	-	-	V01.06	

Reference: DCE-812

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MFP-SB-431R

This Bulletin Supersedes MFP-SB-431

SERVICE BULLETIN

Models: MX-M260/MX-M310,MX-PB12

Priority: Medium

Date: January 2011

Subject: **ROM Upgrade (3) B00 / (4) B01 July 2010 Production**

Description: We have upgraded the MCU and OPE ROM in June 2010, and PRINTER (PCL) ROM in July 2010.

Details: Please see below and on the following pages for more information about this upgrade.

No.	Target model	Control No.	MCU	IMC	OPE	GDI	PCL	Action
(3)	MX-M260	B00	V02.03	V05.00	V01.01	V01.04	-	Mid-'10/6
	MX-M310			V01.00				
(4)	MX-PB12	B01	-	-	-	-	01.08.00-	'10/7
Reason for change:								
Upgrade for compatibility with other markets.								

Note: Please make sure the BOOT version is 01.10 or later, such BOOT firmware is available as a separate download.

Complete Engine Firmware			
Models	MXM260		
Release Type	Production	Control ROM ID	B00
Release Date	July 2010	File Name	A2R0203EFS_26.dat
Versions			
MCU IMC OPE	02.03 05.00 01.01		

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Complete Engine Firmware			
Models	MXM310		
Release Type	Production	Control ROM ID	B00
Release Date	July 2010	File Name	A2R0203EFS_31.dat
Versions			
MCU IMC OPE	02.03 01.00 01.01		

Printer Controller Firmware			
Models	MXPB12 (Option for MXM260, MXM310)		
Release Type	Production	Control ROM ID	B01
Release Date	July 2010	File Name	tl2rmain010800.sfu
Versions			
PRINTER	01.08.00		

ROM Version History

No.	Target model	Control No.	MCU	IMC	OPE	GDI	PCL	Action
(1)	MX-M260	A01	V02.00	V05.00	V01.00	V01.04	-	'09/12
	MX-M310			V01.00				
	MX-PB12		-	-	-	-	V01.06	

Reference: DCE-812/DCE-812R

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MFP-SB-451

SERVICE BULLETIN

Models: AR-M237/AR-M277/AR-M317/MX-M260/MX-M310

Priority: Medium

Date: November 2010

Subject: **Service Manual Corrections**

Detail: Misprints have been corrected in the part numbers for grease needed (service tools) used to the models listed above.
Corrections:

1. Listed pages on service manuals for models AR-M237/AR-M277 (Disassembly, Reassembly, and Maintenance).
   1.1. Grease (GP501MR): 10-9; 10-11; 10-12
   1.2. Grease (GE676): 10-10
2. Listed pages on service manuals for models AR-M257/AR-M317 (Disassembly, Reassembly, and Maintenance).
   2.1. Grease (GP501MR): 10-11; 10-13; 10-14
   2.2. Grease (GE676): 10-12
3. Listed pages on service manuals for models MX-M260/MX-M310 (Disassembly, Reassembly, and Maintenance).
   3.1. Grease (GP501MR): 8-11; 8-14; 8-15
   3.2. Grease (GE676): 8-13

Grease name	Incorrect	Correct	Price rank
GP501MR	UKOG-0012QSZZ	UKOG-0013QSZZ	BL
GE676	UKOG-0013QSZZ	UKOG-0012QSZZ	BL

Reference: **DCE-824**

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MFP-SB-475

SERVICE BULLETIN

Models: All

Priority: Medium

Date: April 2011

Subject: **Guide to Formulate Total Call/Best Practice Service Plan.**

Details: Please use this bulletin as a guide while creating your own Total Call/Best Practice Service Plan for models supported by your dealership.

1] Tools/Cleaning Supplies required:

Note: [Check Service Manual for Specific Setting Powders, Greases, and Special Tools]

1) Service Manual
2) Phillips Screwdriver
3) Stubby Phillips Screwdriver
4) Vacuum Cleaner
5) Mild Soapy Water
6) Mild Glass Cleaner
7) Soft Cloth for cleaning
8) Test Chart
9) Drum Setting Powder
10) Heat Resistant Grease
11) Grease
12) Specialized Service Tools [ID Sensor Calibration Jig etc... Check adjustment section of SM]

2] Maintenance Recommendations:

Follow the Service Manual recommendations for item replacement and maintenance intervals.

3] Necessary Execution Items in Maintenance and Servicing:

Follow the Service Manual instructions regarding counter resets, adjustments, and other required actions when performing maintenance or servicing the machine.

4] Car Parts Inventory Recommendations:

Use the model specific Service Manual and Parts Guide for parts & supplies necessary for Maintenance and Service.

5] Total Call Procedure:

Follow the steps outlined for Total Call recommendations designed to optimize the performance of the Imager and reduce the occurrence of Call Backs.
On each section, check 22-6 prints for indications of trouble and any items nearing end of life. Be prepared to replace any parts or Maintenance Items that are worn, nearing end of life, or causing machine trouble.

Step #1 Evaluate the Machine.

a) Perform Simulation 22-6/23-02 and print out the Data Prints from the machine.
b) Check the data prints for copy quality problems.
c) Check the Jam & Trouble Counters. Look for indications of trouble and note specific areas that should be addressed during the Total Call procedure.
d) Check Maintenance and various Life Counters and replace any items that are nearing end of life. Note: Some models have new simulation 22-13
e) Run test Simplex and Duplex copies of your Test Chart in DSPF mode and off the glass to see if there are any copy quality problems.
f) Turn off the machine and Fax Unit, if installed, and unplug it from the wall outlet.
g) Disconnect any network and fax connections.

Step # 2 Process Section.

a) Remove the Developer Unit(s) and Process Unit(s) and set them aside.
b) Clean out the cavity of the machine with a vacuum cleaner and a cloth.
c) Remove the Drum from the Process Unit. Clean the Process Unit, Main Charger, and check the Drum surface for wear or damage.
d) Apply Drum Setting Powder [Check Service Manual for Part Number] to the Drum surface and Cleaning Blade. Reassemble and rotate the Drum by hand.
e) Clean the DV Unit exterior and check the side seals & molts.
f) Reinstall the Developer Unit(s) and Process Unit(s).

Step # 3 PS Roller Unit

a) Remove the Paper Dust Removing Unit and vacuum out any paper dust.
b) Check the Test Copies for signs of Paper Skew or Lead Edge Variations.
c) Clean the PS Roller with Mild Soapy Water and inspect for signs of wear.
d) Check the Follower Rollers and confirm for even pressure and smooth action.
e) Reinstall the Paper Dust Removing Unit.

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Step # 4 Paper Feed Sections

a) Remove, clean and inspect the Take Up, Feed, and Separation Rollers for wear.
b) Replace any worn parts as indicated by the 22-6 print, Maintenance Schedule, or visual inspection.
c) Reinstall the Take Up, Feed, and Separation Rollers.

Step # 5 DSPF and Optics

a) Clean and check the DSPF Take Up, Feed, and Separation Rollers for wear.
NOTE: Some models may have a Separation Pad instead of a Separation Roller.
b) Clean the DSPF paper path and rollers.
c) Clean the Mirrors, Lens, Table Glass, White Reference Glass, and Dust Proof Glass.

Step #7 Fuser Unit

a) Visually inspect the fusing unit for wear or damage.
b) Clean the entrance guide, separation pawls, and thermistors.
c) Check the condition of the Fuser Web & Cleaning Rollers.

Step # 8 Transfer Sections

a) Check Transfer belt(s) and rollers for signs of damage or abnormal wear.
b) Clean the transfer sections while using care not to leave any oil or other contaminates on the transfer belt or transfer roller surface.

Step #9 Duplex Section

a) Visually inspect the paper path.
b) Clean the rollers and guides.

Step # 10 Finishing Options

a) Visually inspect the paper path.
b) Clean the rollers and guides.

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Step # 12 Completion

a) Check for proper clearance & ventilation around the machine.
b) Close all covers except for the front door. **Do not allow the machine to operate until any required adjustments are performed, such as SIM 25-02.**
c) Plug the machine in and turn on the power switch.
d) IMPORTANT. Perform ALL Simulations listed that pertain to the maintenance items replaced [Check Service Manual for specific Simulations necessary].
e) Calibrate the machine for proper copy quality.
f) Run Simplex & Duplex copies of your Test Chart in DSPF mode & off the glass to see if there are any copy quality problems.
g) Be sure to test all paper trays and finishing options including Stapling & Saddle Stitch to verify correct operation.
h) Reconnect the Network & Fax connections if any.
i) Clean the exterior covers.
j) Fill out the Service History to record all work performed. **Be sure to record the lot number of the Drum and Developer if they were replaced.**

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MFP-TB-384

TECHNICAL BULLETIN

Models: MX-M260/MX-M310/AR-M257/AR-M317

Priority Medium

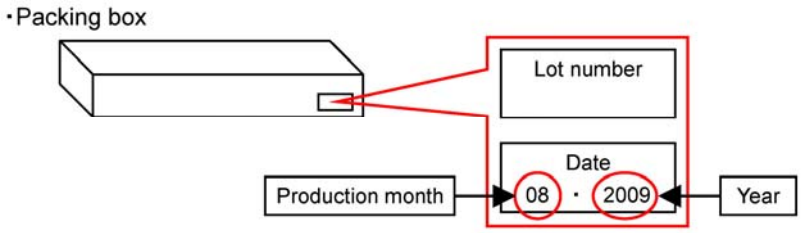
Date: October 2009

Subject: **Cleaning Felt Mounting Plate AS added to Upper Heat Roller Kit to Prevent Thermistor Contamination**

Description: A Cleaning Felt Mounting Plate AS has been added to the Upper Heat Roller Kit from August 2009 production.

Details: A Cleaning Felt Mounting Plate AS has been added to AR-310UH (Upper heat roller kit) also used for other models. When maintaining MX-M260/MX-M310 use AR-310UH manufactured during and after August 2009 preferentially.
If using AR-310UH produced before August 2009 for MX-M260/MX-M310, order Cleaning Felt Mounting Plate AS (CPLTM0513QS01) supplied as a service part.

Note: Even though the Cleaning Felt Mounting Plate AS is supplied with AR-310UH, it must not be used for AR-M257/AR-M317.



Reference Number: DCE-766

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MFP-TB-396

TECHNICAL BULLETIN

Models: MX-M260/MX-M310

Priority: Medium

Date: November 2009

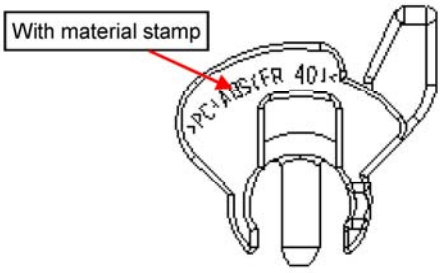
Subject: **New Stronger Delivery Paddler Holder Improves Resistance to Cracking**

Description: We have changed the material that the Delivery Paddler Holder Unit is made from to give it superior resistance to cracking, from October 2009 production.

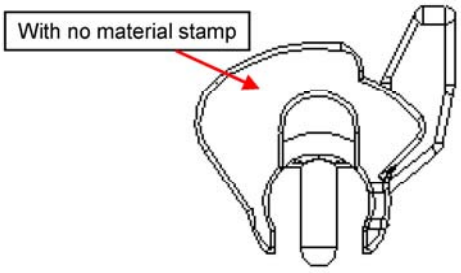
Details: The holder section of the Delivery Paddler Holder Unit may crack in a small number of cases. The new part is made of a stronger substance.

・Delivery paddler holder unit

Before change (PC/ABS)



After change (POM)



Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-M260 MX-M310	11 -19	0EUUNT3440C61	0EUUNT3440C62	AP	Delivery Paddler Holder Unit	3

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference Number: DCE-780

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MFP	TECHNICAL BULLETIN
MFP-TB-402	

Models: MX-FN13 (Option for MX-M260/MX-M310)

Priority: Medium

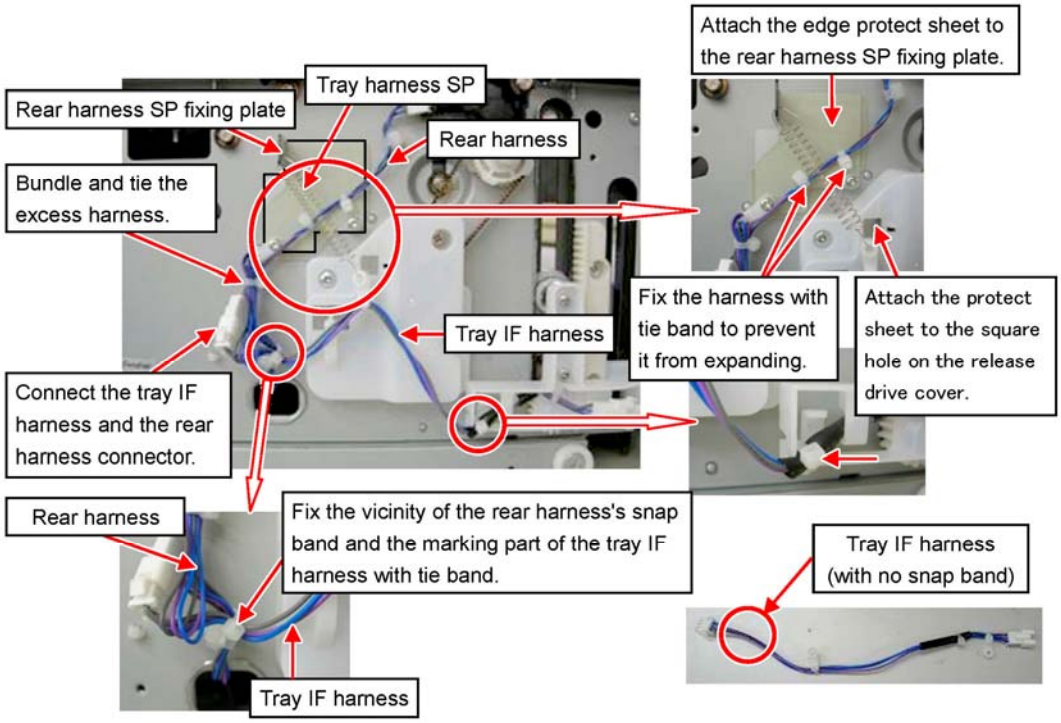
Date: December 2009

Subject: **Part Changes to Prevent Paper Detection Failure due to Rear Harness Breaking**

Description: We have changed and added parts to the Finisher to better prevent breaking of the Rear Harness which is needed for paper detection in the paper Output Tray.

Details: We made some temporary measures to prevent breaking of the Rear Harness from the beginning of production. A permanent measure against the issue has now been taken starting with production in October, 2009.
Both the temporary and the permanent solutions are shown below and on the following pages.

Temporary Solution:


Attach the edge protect sheet to the rear harness SP fixing plate.
Tray harness SP
Rear harness SP fixing plate
Rear harness
Bundle and tie the excess harness.
Fix the harness with tie band to prevent it from expanding.
Attach the protect sheet to the square hole on the release drive cover.
Tray IF harness
Connect the tray IF harness and the rear harness connector.
Rear harness
Fix the vicinity of the rear harness's snap band and the marking part of the tray IF harness with tie band.
Tray IF harness (with no snap band)
Tray IF harness

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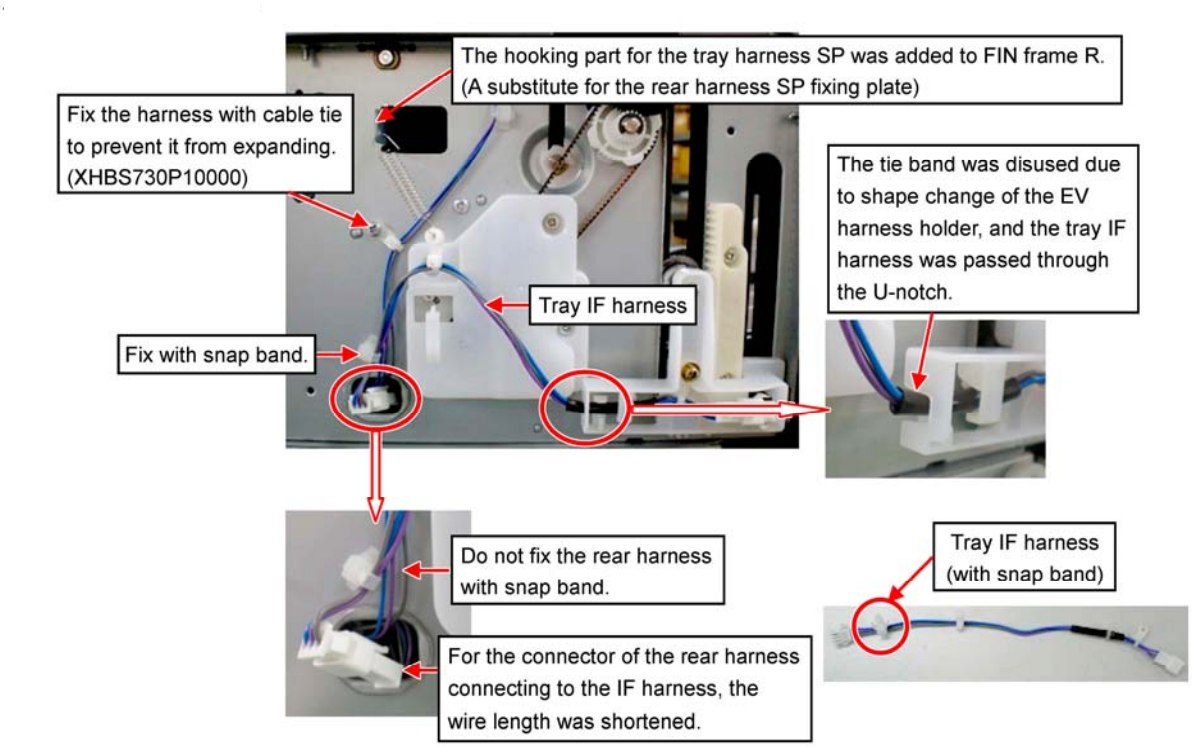
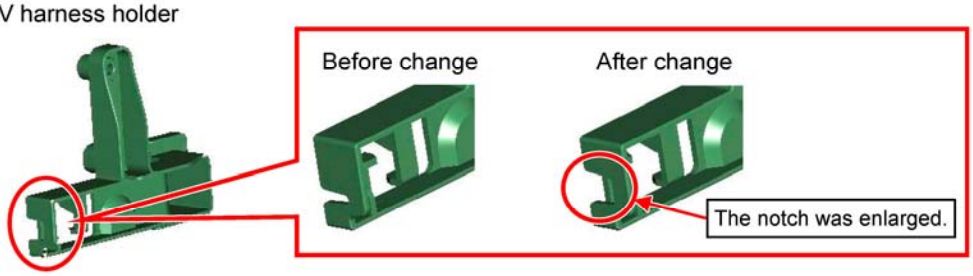
Permanent Solution:

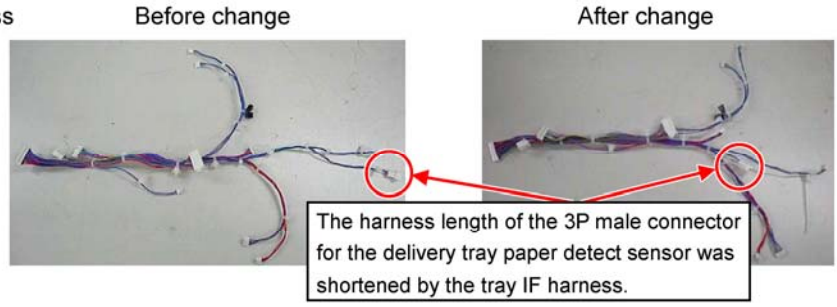

The hooking part for the tray harness SP was added to FIN frame R.
(A substitute for the rear harness SP fixing plate)
Fix the harness with cable tie to prevent it from expanding. (XHBS730P10000)
The tie band was disused due to shape change of the EV harness holder, and the tray IF harness was passed through the U-notch.
Tray IF harness
Fix with snap band.
Do not fix the rear harness with snap band.
Tray IF harness (with snap band)
For the connector of the rear harness connecting to the IF harness, the wire length was shortened.

Parts Information:

・EV harness holder



・Rear harness


Before change
After change
The harness length of the 3P male connector for the delivery tray paper detect sensor was shortened by the tray IF harness.

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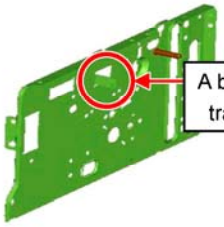
・FIN frame R AS

Before change

After change



A bending portion for fixing the tray harness SP was added.

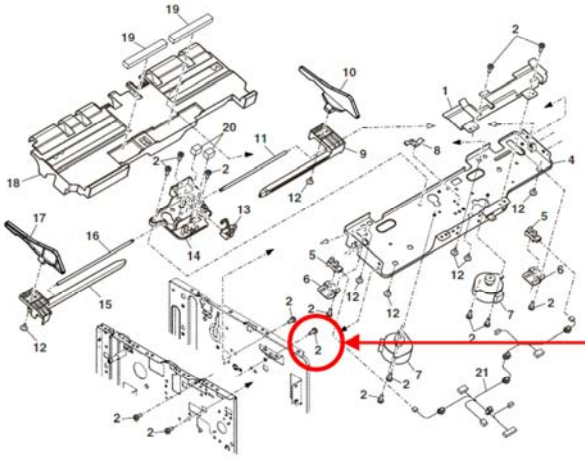
・Release drive cover

Before change

After change

Harness hook was removed.

・Changed screw (5 ST tray 1)



Before change: (XHBS730P08000)
After Change: (XHBS730P10000)
The screw was lengthened to prevent the rear harness from expanding and to fix the cable tie.

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Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-FN13	4 -1	LHLDZ0147QSZZ	LHLDZ0147QSZ1	AN	EV harness holder	3
	4 -	-	DHAI-0618QSPZ	AT	Tray IF harness	
	4 -29 8 -41	DHAI-0583QSPZ	DHAI-0583QSP1	BB	Rear harness	
	5 -2	XHBS730P08000	Q'ty change: 15→14	AB	Screw (M3×8)	
	5 -	-	XHBS730P10000	AD	Screw (M3×10)	
	8 -12	CFRM-0101QS01	CFRM-0101QS02	BD	FIN frame R AS	
	9 -3	PCOVP0145QSZZ	PCOVP0145QSZ1	AP	Release drive Cover	
	9 -	-	MSPRT0436QSZZ	AL	Tray harness SP	

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference Number: DCE-781

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MFP-TB-415

TECHNICAL BULLETIN

Models: MX-M260/MX-M310/AR-M257/AR-M317/AR-M237/AR-M277

Priority: Medium

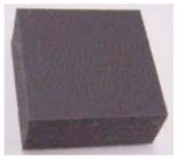
Date: March 2010

Subject: **New Spacer added to RSPF to Eliminate Front/Rear Magnification Difference**

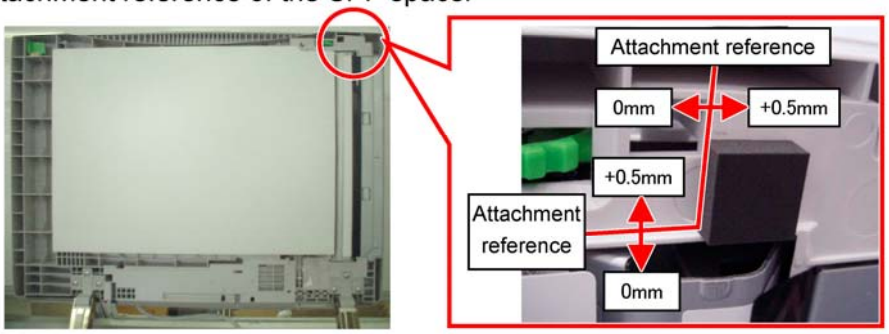
Description: In December 2009 we added a spacer to the Base Tray Unit of the RSPF to make the RSPF parallel to the Scanner Unit to eliminate any magnification difference between the front and rear.

Details: Please see below and on the following page for more information about this change.

- SPF spacer



- Attachment reference of the SPF spacer



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Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-M260 MX-M310	30 - 31 -	--	PSPAZ0058QSZZ	AC	SPF Spacer	6
AR-M257 AR-M317	5 - 6 -					
AR-M237 AR-M277	4 - 5 -					

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: DCE-795

MFP

MFP-TB-417

TECHNICAL BULLETIN

Models: MX-M260/MX-M310/AR-M257/AR-M317/AR-M237/AR-M277
AR-235/AR-275/AR-N275/AR-M208/AR-M208N

Priority: Medium

Date: March 2010

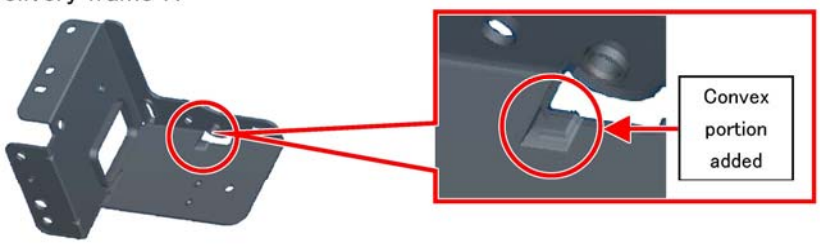
Subject: **New Parts Prevent Second Delivery Unit Gear Slipping**

Description: We have changed some parts in December 2009 production to prevent the Gear slipping in the Second Delivery Unit.

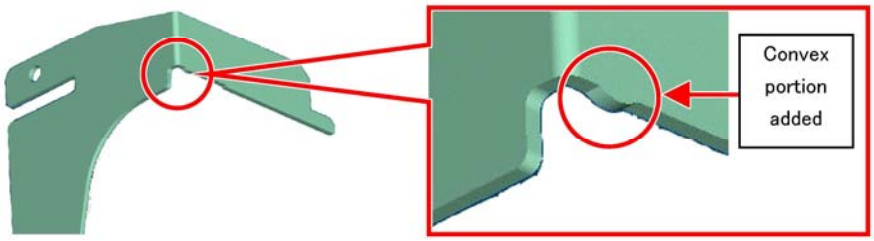
Details: We have found that in some cold environments, the Gears connecting the First and Second Delivery Units may slip which can cause abnormal noises or paper jams. Please see below and on the following page for more details about this part change.

Parts Changed

- Delivery frame R



- Delivery support angle



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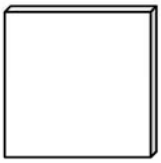
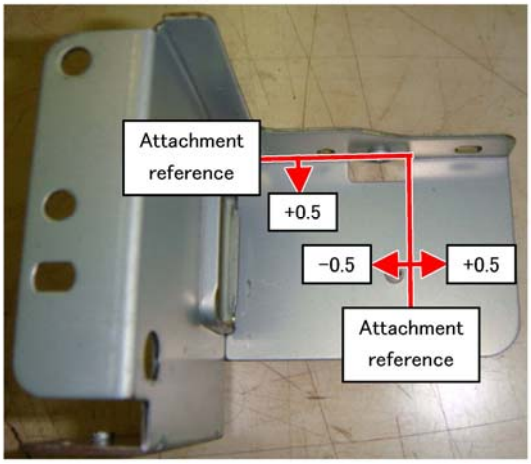
Part Added

・ Delivery frame sheet



・ Location attaching the delivery frame sheet to the delivery frame R



Model	P/G No.	Previous Part	New Part	Price Rank	Description	Inter-change-ability
MX-M260 MX-M310 AR-M257 AR-M317 AR-M237 AR-M277 AR-235 AR-275 AR-N275 AR-M208 AR-M208N	35 -6 29 -6 28 -6 27 -6	LFRM-0058QSZ1	LFRM-0058QSZ2	AG	Delivery Frame R	3
	23 -45 31 -45 30 -45 29 -	LPLTM0369QSZZ	LPLTM0369QSZ1		Delivery Support Angle	
	35 - 29 - 28 - 27 -	--	PSHEZ0686QSZZ	AK	Delivery Frame Sheet	

Interchangeability

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of the new type. New type can be used in place of current type.	6. Others.

Reference: DCE-798

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MFP

MFP-TB-444

PARTS BULLETIN

Models: MX-TE10 (Option for MX-M260/MX-M310/AR-M237/AR-M257 AR-M277/AR-M208/AR-M208N/AR-M317)

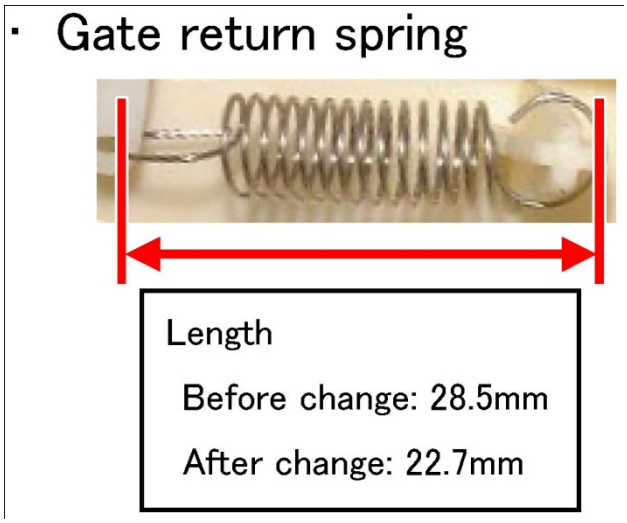
Priority: Low

Date: June 2010

Subject: **Increased Holding Strength of the Right Delivery Switching Gate (Delivery Tray Unit)**

Details: Please see below and the following page for more information about this service part.

The tension of the Gate Return Spring has been changed to increase the downward holding power of the Right Delivery Switching Gate. This Gate Return Spring is also used in the 1st Delivery Section of the Main Unit.



Implementation Date: mid-April 2010

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Model Name	P/G No.	Previous parts	New parts	Price rank	Q'ty	Parts name	Effec-tive time	Inter-change-ability
MX-TE10	1 -43	MSPRT0217QSZ1	MSPRT0217QSZ2	AC	1	Gate return spring	Mid-April 2010	3
MX-M260 MX-M310	21 -14							
AR-M257 AR-M317 AR-M318	28 -14							
AR-M237 AR-M277	27 -14							
AR-275 AR-M208 AR-M208N	26 -14							

<Interchange>

1. Interchangeable.	4. Not Interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related
3. Current type cannot be used in place of new type. New type can be used in place of current type.	6. Others.

Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Reference: DCE-809

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SHARP

MFP

TT-20079R2

This version Supersedes TT-20079R
Modified text is in BLUE

TECHNICAL TIP

Models: MX-2300N/MX-2600N/MX-2700N/MX-3100N/MX-C311/MX-C401
MX-3500N/MX-3501N/MX-4501N/MX-4100N/MX-4101N/MX-5001N
MX-5500N/MX-6200N/MX-6201N/MX-7000N/MX-7001N
MX-M283N/MX-M363N/MX-M453N/MX-M503N/MX-M350N/MX-M450N
MX-M550N/MX-M620N/MX-M700N/MX-M850/MX-M950/MX-M1100

Priority: Medium

Date: November 2010

Subject: **Sharpdesk Installation Trouble**

Symptom:

On one or more computers Sharpdesk installs and works as expected, but on some other computers one of the following issues occur:

- the install fails
- the install is incomplete
- install completes but Sharpdesk will not start
- a component (Composer, ICT, etc...) does not work
- Sharpdesk will not uninstall

Cause:

- Conflict with some other software on the computer
  - Antivirus software running during install attempt
  - Other vendor scanner software
  - FTP server software
- File corruption
- Windows malware or virus
- Windows registry trouble
- Incorrect Windows user account logged in when installing

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Solution: Follow the suggestions below to troubleshoot and resolve the issue with Sharpdesk

1. Try scanning to a laptop and crossover cable with Sharpdesk to eliminate the network as the source of any issues and also to verify that scanning will work from the MFP
2. Reboot Computer
3. Log in as the LOCAL computer administrator
   (Not a user account or the domain administrator account)
4. Remove other vendor scanning software
5. Remove any other FTP software
6. Check programs against a working computer and remove extra software from computer having trouble
7. Reboot computer again
8. Log in as the LOCAL computer administrator again
9. Shut down antivirus and firewall software
10. In Task Manager shut down any running applications and end any processes that are different than those on a working computer
11. Install Sharpdesk
12. If there is still trouble after these steps, try the Sharpdesk installation procedure again after booting into Safe Mode
13. If there is still trouble after all of these steps have been followed; either restore Windows from a previous backup and try again, or reinstall Windows on the computer and then install Sharpdesk

SHARP

MFP

TT-20115

TECHNICAL TIP

Models: MX-2600N/MX-3100N/MX-4100N/MX-4101N/MX-5001N
MX-M283N/MX-M363N/MX-M453N/MX-M503N
MX-C311/MX-C401

Priority: Medium

Date: December 2009

Subject: **Troubleshooting Scan to Email (SMTP)**

Symptom: Scan to Email is configured but does not work.

Cause: Configuration is wrong on the MFP or there is SMTP server trouble.

Solution: Follow the steps below to check the MFP and the mail server configuration.

MFP Web Page Settings:

1. Go to the Network Settings and then the Services Settings and click the SMTP tab. Use this location rather than the Quick Settings to configure the MFP for scan to email.
2. Use the SMTP server IP addresses in the Primary and Secondary Server fields rather than the server names.
3. Ask the customer if the mail server is using the default SMTP port of 25. If it is not, then change the Port Number to match the server.
4. The Reply Email Address must be a valid local email address for some mail servers or messages will be discarded.
5. Ask the customer if the server is running SSL for better security. If they are then check the box next to Enable SSL.
6. Leave the User Name and Password blank temporarily and perform the Connection Test. A successful response will verify that the server is really an SMTP mail server.

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Mail Server Settings:

1. Create a new user account and password for the MFP on the mail server. This user account name, the Name set in the MFP's Top Page, and the Device Name in Network Settings should all be the same. Use this account and password for SMTP Authentication.

2. Test the MFP with another email server. There are several email servers that are free to download and demonstrate. Connect the MFP to the email server computer with a crossover cable. If this works without errors then the MFP is working and the trouble is with the customer's email server.

3. If scan to email works inside the customer's domain but cannot be sent to outside locations, then the email server needs to be configured to allow outgoing email from the MFP.

4. If scan to email still does not work, set up a network protocol analyzer to look at the MFP and server during a test scan to determine what communication is occurring between the MFP and the server.

Note: If all previous steps were followed and using an ISP (Internet Service Provider) or 3rd party web email service and the customer still cannot scan to email:
Contact the ISP or email service provider for additional support. The issue may be with a port setting, the email account, or with the email service provider's security setting.

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SHARP

MFP

TT-20134

TECHNICAL TIP

Models: ALL SHARP MFPS

Priority: Medium

Date: January 2010

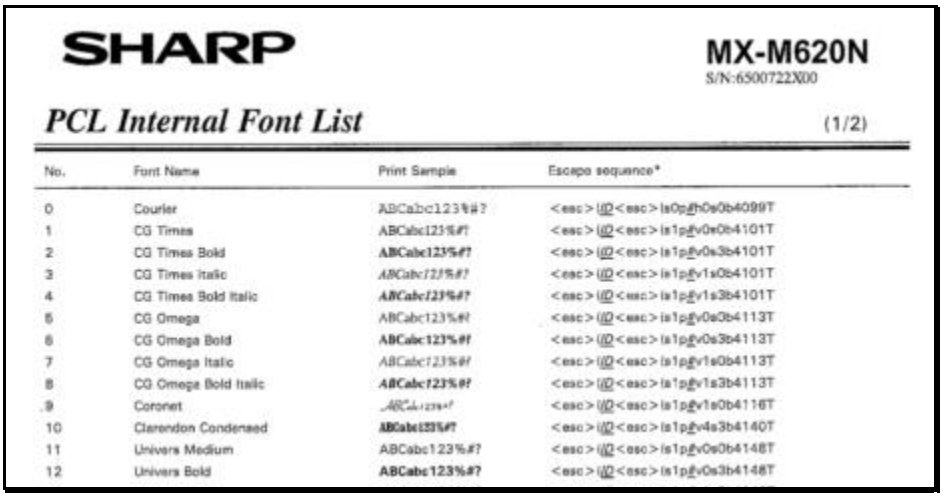
Subject: **How to Change the Default Font using PJL Commands**

Details: Follow this procedure to change the MFP default font with PJL commands.

Required: A Sharp MFP on the network – we will need to know the IP Address of the MFP
A Windows computer on the same network as the Sharp MFP

On most new Sharp MFPs the default font can be set at the MFP Control Panel or from the webpage. There may be cases where the default font needs to be changed when the MFP is not accessible. This document will demonstrate the procedure for changing the font from the currently set font using PJL codes sent across the network. For this procedure, the MX-M620N is being used. Use the same procedure for other models.

1. We will begin by printing the Font List. At the MFP's LCD panel select System Settings, List Print, Printer Test Page, and then PCL Internal Font List. Two pages are printed that list 80 internal fonts. Any of these internal fonts can be selected for printing. In this procedure, the Coronet font (No. 9) will be used as the sample font. Note that the font numbers may vary between different Sharp MFPs.



SHARP

MX-M620N
S/N:6500722X00

PCL Internal Font List (1/2)

No.	Font Name	Print Sample	Escape sequence*
0	Courier	ABCabc123%#?	<esc>(@<esc>(s0p[illegible]h0s0b4099T
1	CG Times	ABCabc123%#?	<esc>(@<esc>(s1p[illegible]v0s0b4101T
2	CG Times Bold	**ABCabc123%#?**	<esc>(@<esc>(s1p[illegible]v0s3b4101T
3	CG Times Italic	*ABCabc123%#?*	<esc>(@<esc>(s1p[illegible]v1s0b4101T
4	CG Times Bold Italic	***ABCabc123%#?***	<esc>(@<esc>(s1p[illegible]v1s3b4101T
5	CG Omega	ABCabc123%#?	<esc>(@<esc>(s1p[illegible]v0s0b4113T
6	CG Omega Bold	**ABCabc123%#?**	<esc>(@<esc>(s1p[illegible]v0s3b4113T
7	CG Omega Italic	*ABCabc123%#?*	<esc>(@<esc>(s1p[illegible]v1s0b4113T
8	CG Omega Bold Italic	***ABCabc123%#?***	<esc>(@<esc>(s1p[illegible]v1s3b4113T
9	Coronet	[illegible]	<esc>(@<esc>(s1p[illegible]v1s0b4116T
10	Clarendon Condensed	**ABCabc123%#?**	<esc>(@<esc>(s1p[illegible]v4s3b4140T
11	Univers Medium	ABCabc123%#?	<esc>(@<esc>(s1p[illegible]v0s0b4148T
12	Univers Bold	**ABCabc123%#?**	<esc>(@<esc>(s1p[illegible]v0s3b4148T

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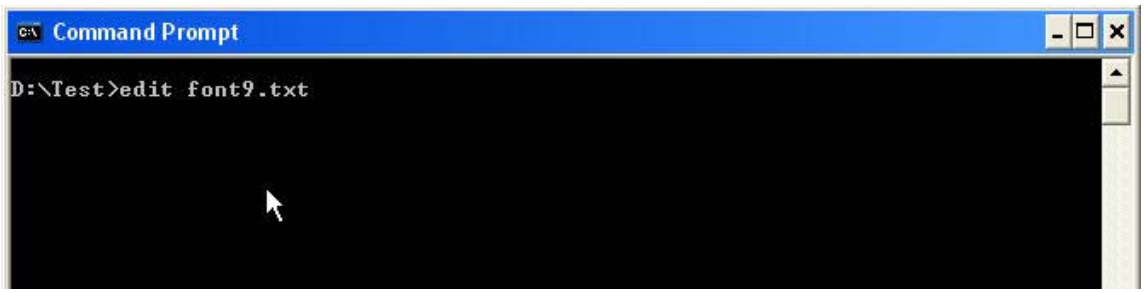
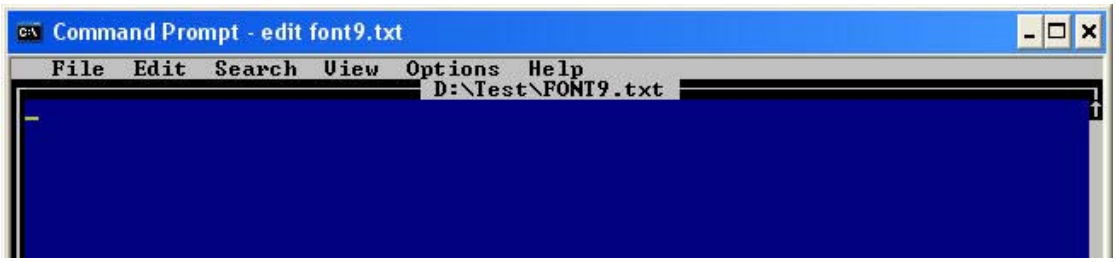
2. Open a Command Prompt on the computer. At the Command Prompt type: edit font09.txt as shown below and then press the Enter key.



3. This will open the DOS editor to create a new text document named font9.txt that will be used as a PJL script.

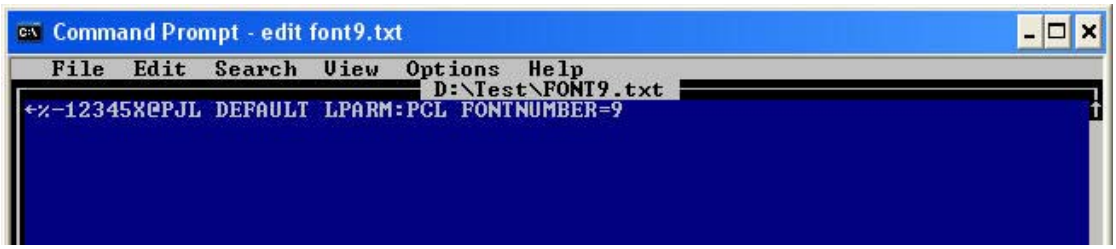


4. The first character in a PJL script appears as a left arrow and is called an escape character. The left arrow starting the sequence is inserted by pressing and releasing the two keys *Ctrl* and *p* and then pressing *Esc.* This will appear in the DOS Editor: ←.

5. Type in the rest of the command line as shown below:

←%-12345X@PJL DEFAULT LPARM:PCL FONTNUMBER=9

The FONTNUMBER=9 represents the Coronet font on the PCL Internal Fonts List.


Command Prompt - edit font9.txt
File Edit Search View Options Help
D:\Test\FONT9.txt
←%-12345X@PJL DEFAULT LPARM:PCL FONTNUMBER=9

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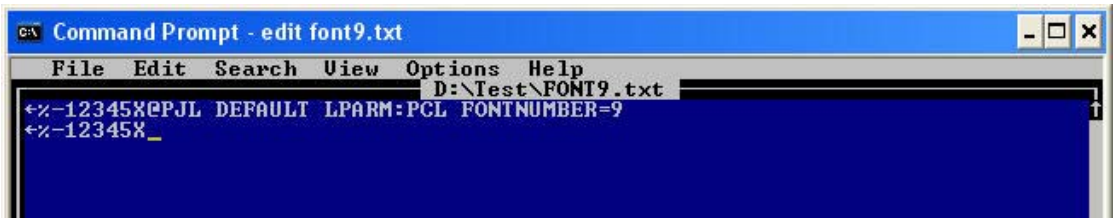
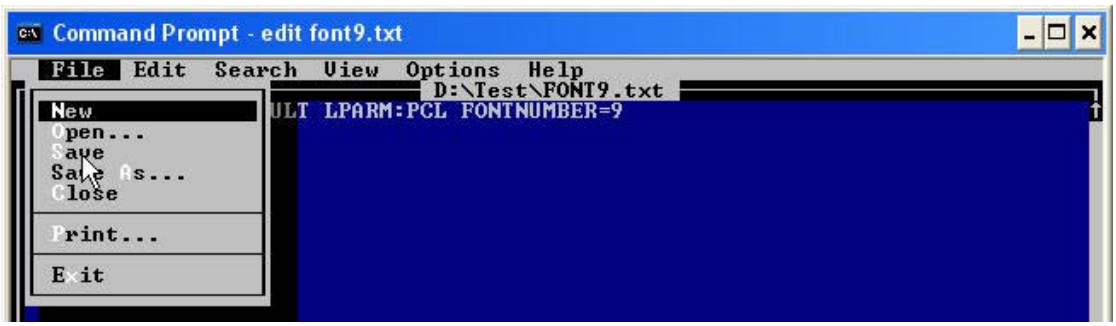
6. Next, the closing line of the PJL script must be entered. It too, must start with the escape character and is typed in as shown below:

   ←%-12345X

   The command ←%-12345X is known as the UEL, Universal Exit Language. It must be the last line for every PJL script.



7. To save the PJL script that was created click on File and then select Save.



8. To exit the DOS editor, click File and then select Exit. You will be brought back to the Command Prompt.

9. To transmit the PJL script over the network to the Sharp MFP, you will need the MFP's IP address. The LPR command is used for sending the PJL script to the MFP and it is typed in as shown here:

   lpr –S xxx.xxx.xxx.xxx –P lp font9.txt
   (where xxx.xxx.xxx.xxx is the IP address of the Sharp MFP)

   Press the Enter button to send the command.

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10. Once the command is executed, you will be returned to the C prompt.

11. You now should be able to send a sample text file to the Sharp MFP by also using the LPR command. Once it prints, the new default font will be used to print the job.

This completes the procedure for using PJL codes to change the font

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SHARP

MFP

TT-20135

TECHNICAL TIP

Models: ALL MODELS THAT SUPPORT OPTIONS REQUIRING PRODUCT KEYS

Priority: Medium

Date: January 2010

Subject: **Product Key Registration Information**

The following information has been compiled to assist you regarding Product Key inquires.

- SoftKey Central was launched in late 2009. Once our current boxed inventory is depleted, this will become the sole method to obtain your Product Keys. (Please feel free to start using SoftKey Central today.)

  - **How do I access SoftKey Central?**
    - Simply log into the Sharp Product Center or Sharp-PCService (a.k.a. IDNC-Service) and click the SoftKey Central link.

Note: SoftKey Central Link Displays for Managers and Owners only

  - **How does my Dealership purchase SoftKeys?**
    - SoftKeys are purchased via SharpB2B Web site just as they were in the past.
      - Details and instructions are available inside the SoftKey Central Section.
  - **Can I look up my Product Key information?**
    - Yes! As long as you use SoftKey Central. Your sensitive information is secure but available to you 24/7.
  - **How can I look up previous Product Key information?**
    - The application key booklet should be retained locally.
    - If the booklet is not available, please refer to the automated e-mail that is sent during each Product Key Registration. This contains the Product Key number and the associated MFP information.
  - **If the booklet and e-mail are not available, how can I tell if the MFP has a product key installed?**
    - All options installed on the MFP, including SoftKey options, are listed inside the MFP's Web Page.
    - Simulation 22-6 will list all options, including SoftKey options that are installed on the MFP.
    - Simulation 22-10 will display the name of all installed options including SoftKey options.

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- **Can the technical hotline or my Field Support Representative look up my Product Key information?**
  - In order to keep your private information secure, our technical Hotline Agents and Field Support Representatives do not have access to this information.
- **What recourse do I have in the event I lose a Product Key number and cannot find the e-mail?**
  - Unfortunately, we do not have the ability to reissue lost Product Keys. You will need to purchase a new key.
  - One of the advantages that SoftKey Central will afford you is that it is a central storage location for all of your Product Key information.
  - Remember SoftKey Central generates Product Keys in minutes. You do not have to wait for hard copy shipments.
- **What action can I take if a mistake is made during the Product Key registration process?**
  - Inside the Product Key registration Web site, click on the Contact System Administrator button and select Other, and then click the Next button. Provide the current registration number and include the product option, MFP model number, serial number, and application number. Please explain what needs to be corrected.
  - A new Product Key will not be issued. We do not have the ability to generate Product Keys. However, we can request the Application Number be re-initialized. The Application Number may become available for your desired use if the request is granted.
  - The re-initialization process may take up to 10 business days and is subject to management's approval. Every effort will be taken to reduce this timeline.
- **What action can I take if I need my application number immediately and cannot afford to wait for reinitialized process to take effect?**
  - If this unfortunate circumstance is presented, remember that SoftKey Central can generate new Product Keys in minutes.
- **Can I move a Product Key to another MFP?**
  - Once a Product Key has been enabled on a MFP, the deletion and resale of Application Numbers and resulting generated Product Keys is strictly prohibited.
  - Please see Additional Information on page 3 regarding Demo Mode for your demo room MFPs.
- **What can be done if the MFP has a quality issue and the equipment cannot be repaired?**
  - Contact your assigned Field Support Representative or place a call to the technical hotline. Provide details regarding the concern. Please include the model number, serial number, and provide the Product Key or application information if available.
  - To issue a new Product Key; Sharp Field Support, Quality Assurance, and/or a Factory Representative must confirm that due to a quality issue the equipment cannot be repaired.

Additional Information

- We highly recommend that you run Simulation 22-5 or 22-6 and use the serial number and model number listed there for registering the options to ensure that they are correct. The serial number and model used during the registration process must match the data located inside the MFP's logic, or the Product Key issued will not work. (Please refer to your Service Manual for details on how to enter the Simulation Mode.)

- Please use the Demo Mode for Network Scanning and MXAMX2 (OSA) using Simulation 26-10 or 26-74 on select models.

- The MXM283N, MXM363N, MXM453N, and MXM503N come with the MXAMX2 kit already enabled; please do not register this product for the N models.

- When registering the MXNSX1 or the MXPK10 to an MX-M260, please take caution to ensure you do not register these options to the MX-M260N, even if the MXNBX12 network kit is installed.

- When registering an ARPK1N or MXPKX1 to an ARNB2, ARNB2N, ARNB2A, or MXNB10 use the Case Sensitive Product Number from the Web page. This can be found by logging into the MFP Web page as the Administrator and clicking on the Product Key Setting link under Device Setup.

Product Key Registration Web site link:

https://dse-pub.sharp.co.jp/key/

User Name: keyuser
Password: key000323

SHARP

MFP

TT-20136

TECHNICAL TIP

Models: ALL SHARP MFPS

Priority: Medium

Date: January 2010

Subject: **How to set Default Lines per Page Using PJL Commands**

Details: Follow this procedure to change the MFP default Lines per Page with PJL commands.

Required: A Sharp MFP on the network – we will need to know the IP Address of the MFP
A Windows computer on the same network as the Sharp MFP

This document will demonstrate for changing the number of lines per page from the default value of 60 lines per page to 66 lines per page.

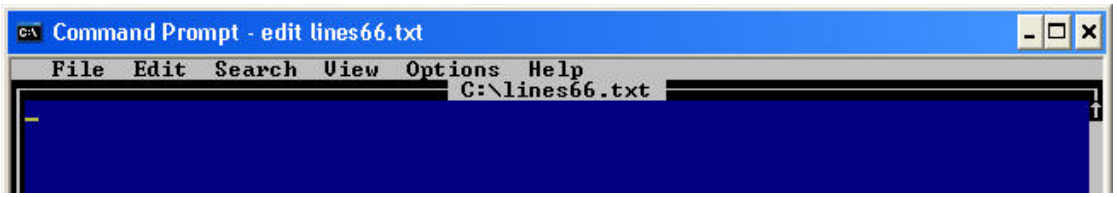
Procedure:

1. At the Command Prompt type:

   edit lines66.txt

   And then press the Enter button.

This will open the DOS Editor as shown below, and create a new text document named lines66.txt that will be used as a PJL script.



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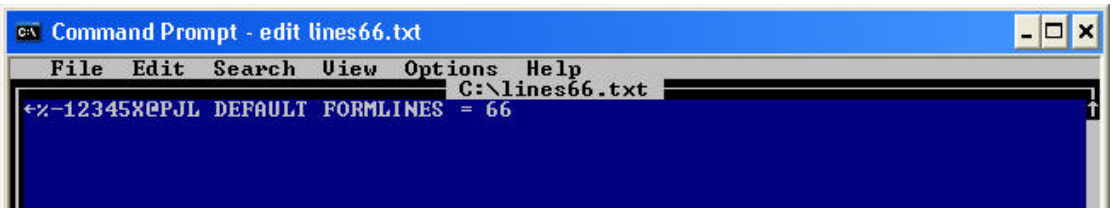
2. The first character in a PJL script appears as a left arrow and is called an escape character. The left arrow starting the sequence is inserted by pressing and releasing the two keys *Ctrl* and *p* and then pressing *Esc* in the DOS Editor. Then type in the command:

   ←%-12345X@PJL DEFAULT FORMLINES = 66

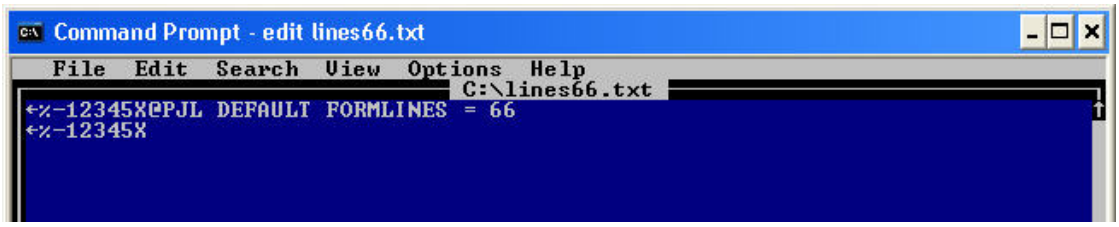
   The number 66 represents the desired number of lines per page.



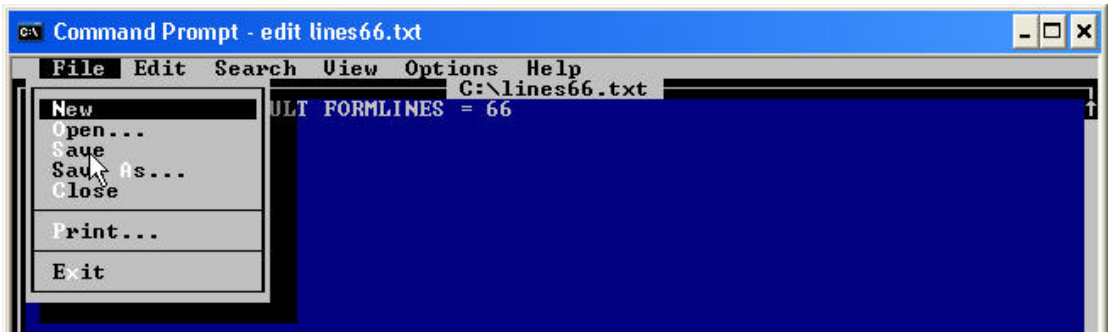
3. Next, the closing line of the PJL script must be entered. It too, must start with the escape character and is typed in as:

   ←%-12345X

   The command ←%-12345X is known as the UEL, Universal Exit Language. It must be the last line for every PJL script.



4. To save the PJL script that was created click on File and then select Save.



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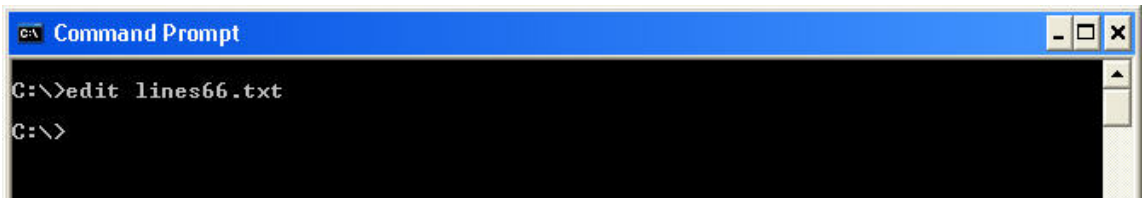
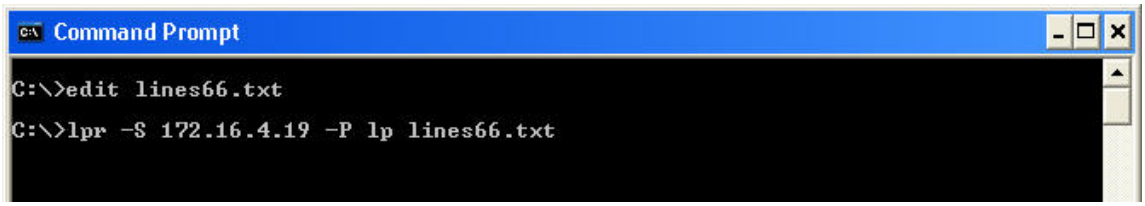
5. To exit the DOS Editor, click File and then select Exit. You will be brought back to the Command Prompt.



6. To transmit the PJL script over the network to the Sharp MFP, you will need the MFP's IP address. The LPR command is used for transmitting the PJL script over the network and is typed in as:

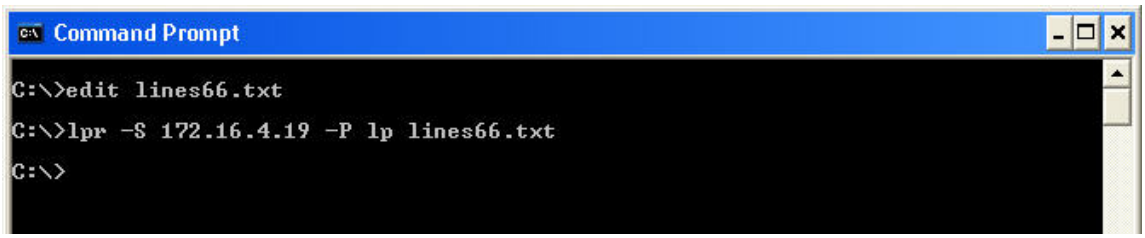
   lpr –S xxx.xxx.xxx.xxx –P lp lines66.txt
   where xxx.xxx.xxx.xxx is the IP address of the Sharp MFP.

   Press the Enter key to send the command.



   Once the command is executed, you will be returned to the C prompt.

7. You now should be able to send a sample text file to the Sharp MFP by also using the LPR command. Once it prints, manually count the number of lines on the fully printed pages to confirm that 66 lines of text were printed.



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SHARP

MFP

TT-20137

TECHNICAL TIP

Models: ALL SHARP MFPS

Priority: Medium

Date: January 2010

Subject: **How to Set Duplex as the Default for Printing Using PJL Commands**

Details: Follow this procedure to set up printing in duplex as the default using PJL commands.

Required: A Sharp MFP on the network – we will need to know the IP Address of the MFP
A Windows computer on the same network as the Sharp MFP

Setting the MFP to print in duplex mode as the default can be done from the MFP control panel, the web pages, and using PJL commands. This document will show how the MFP can be set to duplex print jobs by default using PJL commands.

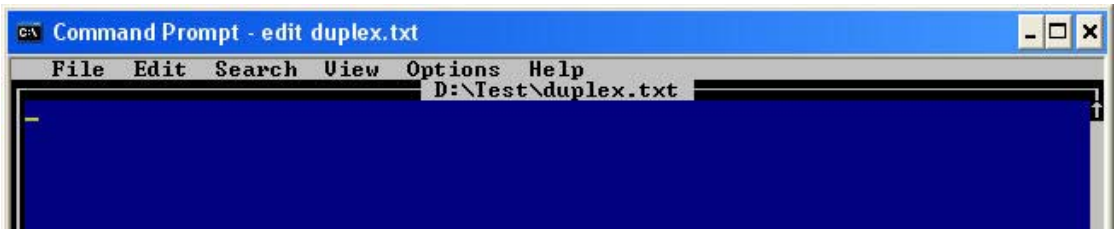
Procedure:

1. At the a Command Prompt type:

   edit duplex.txt

   and then press the Enter button.

2. This will open the DOS Editor and create a new text document named duplex.txt that will be used as a PJL script.



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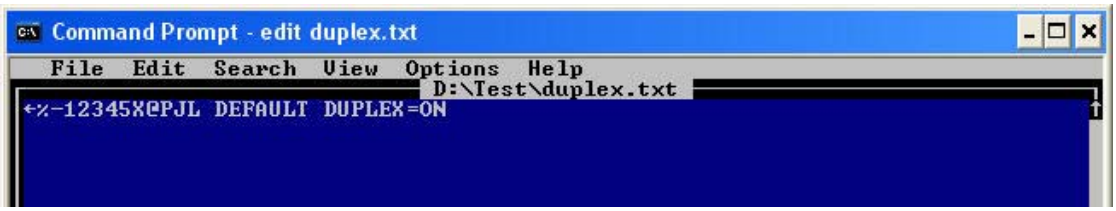
3. The first character in a PJL script appears as a left arrow and is called an escape character. The left arrow starting the sequence is inserted by pressing and releasing the two keys *Ctrl* and *p* and then pressing *Esc* in the DOS Editor. Then type in the command string following the escape character:

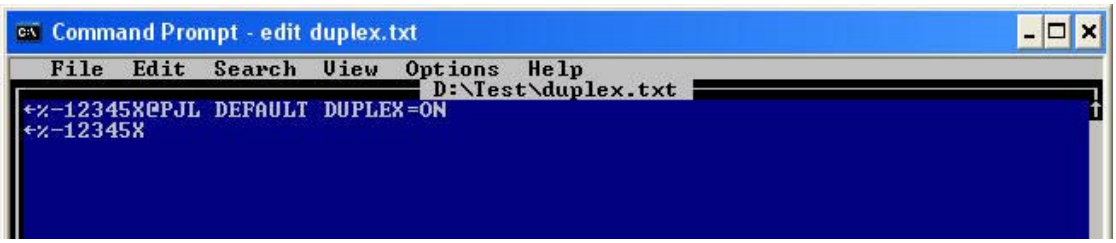
   ←%-12345X@PJL DEFAULT DUPLEX = ON



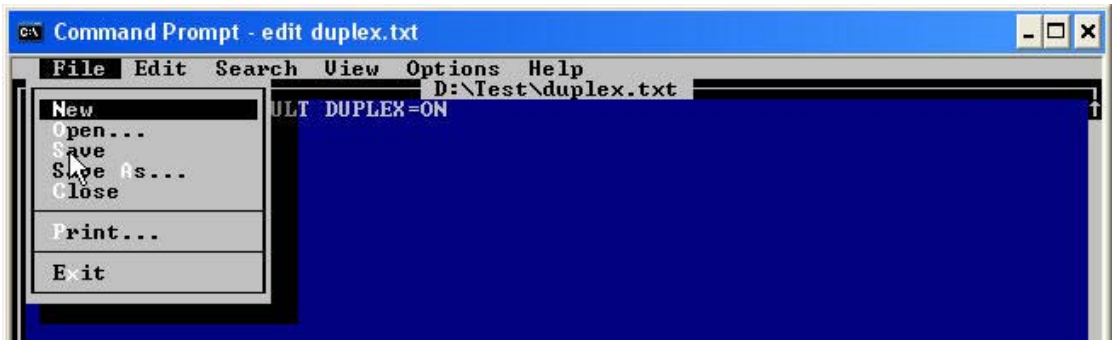
4. Next, the closing line of the PJL script must be entered. It must start with the escape character and is typed in as:

   ←%-12345X

   The command ←%-12345X is known as the UEL, Universal Exit Language. It must be the last line for every PJL script.



5. To save the PJL script that was created click on File and then select Save.



6. To exit the DOS editor, click File and then select Exit. You will be brought back to the Command Prompt.

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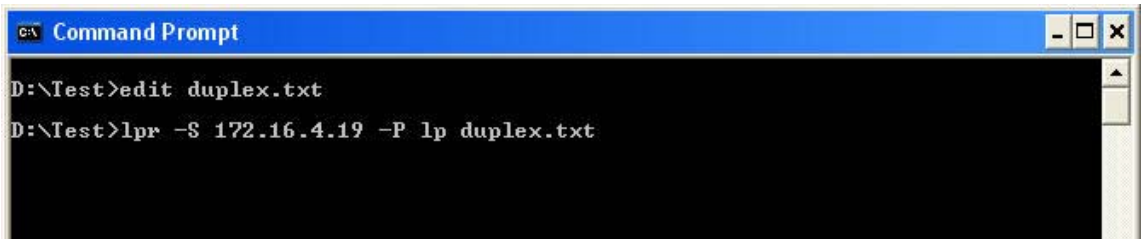
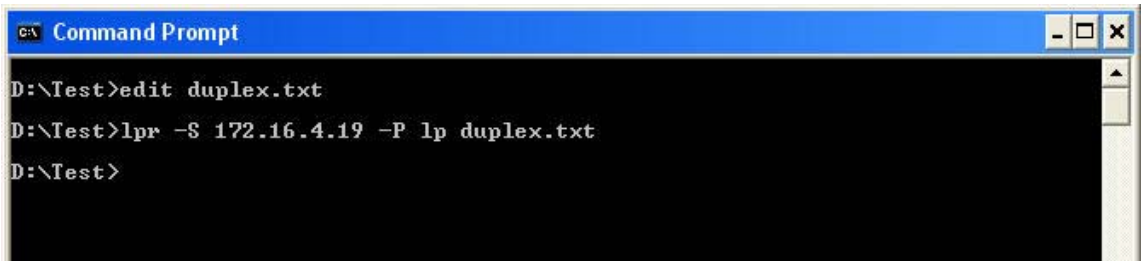
7. To transmit the PJL script over the network to the Sharp MFP, you will need the IP address of the MFP. The LPR command is used for transmitting the PJL script over the network and is typed in as:

   lpr –S xxx.xxx.xxx.xxx –P lp duplex.txt

   Where xxx.xxx.xxx.xxx is the IP address of the Sharp MFP. Press the Enter button to send the command.



8. Once the command is executed, you will be returned to the C prompt.



9. You now should be able to send a multiple page sample text file to the Sharp MFP by also using the LPR command and it should be printed as 2-sided.

This completes the procedure How to set duplex as the default for printing using PJL commands.

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SHARP

MFP

TT-20149

TECHNICAL TIP

Models: ALL SHARP MFPS

Priority: Medium

Date: February 2010

Subject: **How to Allow a Point & Print Install as User from a Server to Windows 7/Vista**

Symptom: Windows requests Administrator password to install printer.

Cause: The Windows 7/Vista specification is to require Local Administrator authority to perform a print driver installation for enhanced security.

Solution: Disable the enhanced security function for the Point & Print Installation of printers.

Procedure for Windows 7/Vista

1. To open the Management Console, type mmc in the Run... box, click OK, and then click Yes in the User Account Control dialog that pops up.
2. In the Console screen, click Add/Remove Snap-ins from the File menu.
3. From Available snap-ins on the left side, select Group Policy Object Editor, and then click Add to add the Group Policy Object.
4. The Select Group Policy Object dialog window will appear, leave the Object name Local Computer and click Finish.
5. Click OK, and close the Add/Remove Snap-ins screen.
6. Now the Local Computer Policy is in the Console Root. Open the Local Computer Policy. Click on Computer Configuration -> Administrative Templates -> Printers
7. Right click on Point and Print Restrictions and select Edit. Set the state to Disabled then click OK.
8. Close the Console, answer No to the save the console question.
9. Now the Point and Print installation will not request the Administrator password.

References: technet.microsoft.com/en-us/library/cc753269.aspx
CSC2-66

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SHARP

MFP

TT-20154

TECHNICAL TIP

Models: ALL SHARP MFPS

Priority: Medium

Date: March 2010

Subject: **Sharp Print Driver Support for Windows 7**

Description: Here is a listing of the Sharp MFP models that have print drivers that support the Windows 7 operating system.

Details: Please see the following page for the details.

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Sharp Print Drivers Support for Windows 7 .

Print Driver Compatibility Chart for Windows 7

Model	Speed-ppm		Windows 7 Driver Availability			
			PS[1]	PCL6	WHQL	UPD-Universal Print Driver Support
MX-C311/C401	31/40	B&W and color	Yes	Yes	Yes	Q1/2010
DX-C310/C400	31/40	B&W and color	Yes	Yes	Yes	Q1/2010
DX-C311/C401	31/40	B&W and color	Yes	Yes	Yes	Q1/2010
MX-2600N/3100N	26/31	B&W and color	Yes	Yes	Yes	Q1/2010
MX-4101N/5001N	41/50	B&W and color	Yes	Yes	Yes	Q1/2010
MX-2300N/2700N	23/27	B&W and color	Yes	Yes	Yes	NA
MX-3500N/3501N/4501N	35/35/45	B&W and 35 color	Yes	Yes	Yes	NA
MX-5500N/6200N/7000N	55/62/70	B&W and 41 color	Yes	Yes	Yes	NA
MX-6201N/7001N	62/70	B&W and 50 color	Yes	Yes	Yes	NA
MX-B401	40	B&W	Yes	Yes	Yes	Q1/2010
MX-M283/M363/M453/M503	28/36/45/50	B&W	Yes	Yes	Yes	Q1/2010
MX-M260/M310[1]	26/31	B&W	Yes	Yes	Yes	NA
MX-M200D[1]	20	B&W	Yes	Yes	Yes	NA
AR-M257/M317 [1]	25/31	B&W	Yes	Yes	Yes	NA
MX-M350N/M450N	35/45	B&W	Yes	Yes	Yes	NA
MX-M550N/M620N/M700N	55/62/70	B&W	Yes	Yes	Yes	NA
MX-M850N/M950N/M1100N	85/95/110	B&W	Yes	Yes	Yes	NA
AR-M162/M207 [1]	16/20	B&W	Yes	Yes	NA	NA
AR-208D/208S[1]	20	B&W	Yes	Yes	Yes	NA
AR-168S/168D [1]	16	B&W	Yes	Yes	NA	NA
AR-M237/M277	23/27	B&W	Yes	Yes	Yes	NA
AR-M350/P350/M450/P450	35/45	B&W	Q1/2010[2]	NA	NA	NA
AR-M355/M455	35/45	B&W	Yes	Yes	Yes	NA
AR-M550/M620/M700 series	55/62/70	B&W	Yes	Yes	Yes	NA

[1] Requires Optional equipment

[2] Only PCL GPD and PS PPD

Availability

These new drivers are available immediately for download from:

- Sharp-PC http://www.sharp-pc.com
- SharpUSA http://www.sharpusa.com/CustomerSupport/ProductDownloads.aspx
- Sharp IDNC Service http://www.sharp-idncservice.com

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SHARP

MFP

TT-20187

TECHNICAL TIP

Models: ALL Sharp MFPs

Priority: Medium

Date: July 2010

Subject: **Information about IP Addresses**

Description: This is a document that contains information about IP Addresses.

IP is short for Internet Protocol. An IP Address is a numerical label assigned to a device on an IP network. It can be assigned manually or by a server, either way, the customer or administrator will inform the technician about their network.

Valid numbers for an IP Address are 0 through 255, however 0 and 255 cannot be used on the last octet for an address because 0 identifies the network and 255 is used for broadcasting. So really we can use numbers 1 through 254. On a small network that we would put a printer into, the address is usually assigned by the network administrator. A unique IP Address is required for every device on a TCP/IP network. An IP Address actually consists of an address and a Subnet Mask and looks like this:

IP Address	192.168.1.45
Subnet Mask	255.255.255.0
Gateway	192.168.1.1

The top line is the IP Address and it identifies the network and a single device on that network. The bottom line is the Subnet Mask, it is the part that tells us which part of the address is network and which part is the device. The third line is the Gateway and this is the address of the router that allows traffic to get to other networks.

The Subnet Mask, sometimes just called Mask, tells us what part is the network and what part is the device. Think of it this way:

IP Address	192	168	1	45
Mask	255	255	255	0
Network Address	192	168	1	
Device Address				45

So the Network Address here in this example is 192.168.1.0. All devices on this network will have an address that begins with 192.168.1 and the Subnet Mask of 255.255.255.0. This network can have up to 254 devices on it because we can use the numbers 1 through 254 for devices.

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These Addresses have special characteristics.

Reserved for Private Addresses		
10.0.0.0	–	10.255.255.255
172.16.0.0	–	172.31.255.255
192.168.0.0	–	192.168.255.255
Auto Configuration Addresses		
169.254.0.0	–	169.254.255.255
Loopback Addresses		
127.0.0.0	–	127.255.255.255
Multicast Addresses		
224.0.0.0	–	239.255.255.255
Broadcast Address		
255.255.255.255		

These ranges that are Reserved for Private Addresses are for internal networks. Routers know not to send traffic for these addresses out to the Internet or into other networks. Networks that use these addresses need gateways or routers to transfer traffic out to and back in from the Internet and other networks.
The Auto Configuration Addresses are used on smaller networks where there is no administrator or the administrator does not want to configure an addressing scheme for their network. A device will look for a server to provide it an address, and if there is not one available, the device will look for and assign itself an unused address in this range.
Loopback Addresses are addresses that use a virtual network interface and do not use hardware. This range of addresses can be pinged, or tested for a response to make sure that the Internet Protocol implementation is working correctly. Usually 127.0.0.1 is the only address used for loopback testing.
Multicast Addresses are used for sending information to a group of receivers simultaneously this is not something we need to be concerned about for the MFP.
The Broadcast Address is used usually when a network device is looking for something such as a DHCP server to obtain an address from. The broadcast goes out to every device on the local network because the sender does not know the address of the server or device it is trying to contact.

SHARP

MFP

TT-20188

TECHNICAL TIP

Models: ALL Sharp MFPs

Priority: Medium

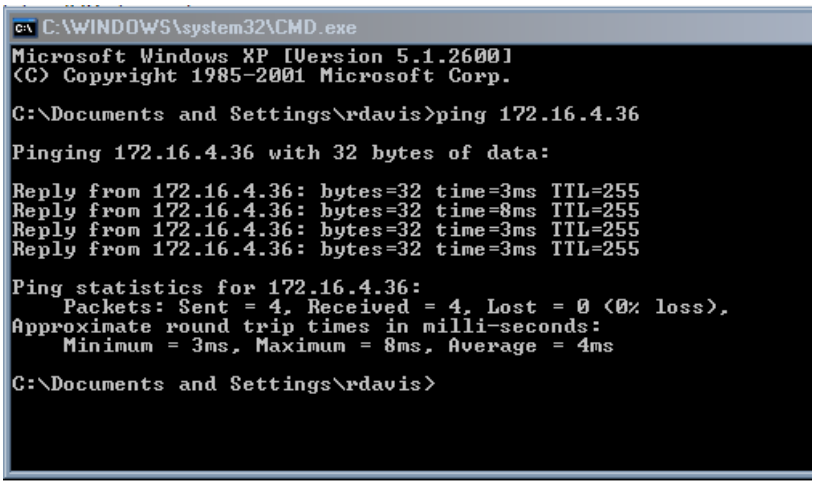
Date: July 2010

Subject: **How to use Ping to Confirm Connection**

Description: Follow these steps to test the connection and configuration of the MFP.

To find out if a device has been correctly configured for a TCP/IP network, use the PING command. Follow these steps to ping the MFP with address 192.168.1.45 from a Windows computer.

1. Click Start, and then Run...
2. Type cmd in the dialog box and press Enter
3. Type ping 192.168.1.45 and press Enter


C:\WINDOWS\system32\CMD.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\rdavis>ping 172.16.4.36
Pinging 172.16.4.36 with 32 bytes of data:
Reply from 172.16.4.36: bytes=32 time=3ms TTL=255
Reply from 172.16.4.36: bytes=32 time=8ms TTL=255
Reply from 172.16.4.36: bytes=32 time=3ms TTL=255
Reply from 172.16.4.36: bytes=32 time=3ms TTL=255
Ping statistics for 172.16.4.36:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 3ms, Maximum = 8ms, Average = 4ms
C:\Documents and Settings\rdavis>

Four replies should be returned. If the ping receives no replies:

1. Check the IP configuration of the computer and the MFP – they must be on the same network
2. Reset the MFP NIC and set it up again
3. Check or replace the network cable
4. Check the MFP NIC for trouble

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SHARP

MFP

TT-20208

TECHNICAL TIP

Models: MX-M260/MX-M310

Priority: Medium

Date: September 2010

Subject: **Toner Motor Makes a Clunking Sound and F2-02 Error**

Symptom: Toner motor makes a clunking sound and after some time an F2-02 error appears.

Cause: Toner motor gear may be causing the issue.

Solution: Replace the toner motor gear.

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SHARP

MFP

TT-20220

TECHNICAL TIP

Models: MX-M260/MX-M310/MX-FR17U/MX-FR18U

Priority: Medium

Date: December 2010

Subject: **BOOT ROM Upgrade needed to Support Engine Firmware**

Symptom:

Below is a list of symptoms that may occur if the BOOT ROM is not upgraded when engine firmware is upgraded. Additional symptoms may occur that are not listed.

1. The MFP will not enter sleep mode.
2. Operational panel will enter a “locked” state.
3. A sheet of paper will feed without entering a command, a jam will occur before the drum. The main charge can be ON which may damage the drum.
4. The lift up motor will continue to drive, creating a banging noise.

Solution:

The BOOT ROM must be upgraded when the engine firmware is upgraded. This also applies when a Data Security Kit (DSK) is installed.

Note:

1. MX-M260/MX-M310: For models with MCU version 2.00 or higher; it is required to update the BOOT ROM to version 1.10 which is available as a separate download.
2. MX-FR17U/MX-FR18U: For models with MCU version 30.10 or higher; it is required to update the BOOT ROM to version 30.10 which is available as a separate download.

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SHARP

MFP

TT-20234

TECHNICAL TIP

Models: MX-M260/MX-M310

Priority: Medium

Date: January 2011

Subject: **Lift Unit for Tray One is Broken**

Symptom: Lift unit for tray one is broken.

Cause: Lift unit for tray one was broken.

Solution: Replace the lift unit and update the firmware.
Please note: For models with MCU version 2.00 or higher it is required to update the BOOT ROM to version 1.10 which is available separately, see the information attached with the firmware download.

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MFP

TT-20375

TECHNICAL TIP

Models: All Current MFPs

Priority: Medium

Date: January 2012

Subject: **Troubleshooting USB Printing**

Symptom: Error or no output when printing.

Cause: USB, print driver, or Windows trouble.

Solution: Follow these steps to solve the trouble.

1.) Use the correct print driver; GDI driver and not PCL driver. Only use PCL with the PCL controller.
2.) Use 6 foot or shorter, single USB cable or attenuation can occur.
3.) Reinstall the printer driver.
4.) Try different USB port on PC.
5.) Test USB printing with different computer even if different operating system.
6.) Delete USB devices from device manager and reboot PC.
7.) Update USB device drivers for the operating system.
8.) Uninstall all other USB printers.
9.) Reinstall the Sharp driver and test USB printing.

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